Applied Value
Pulp & Paper Report

Quarterly Analysis

Q1, 2021

Applied Value
Kungsgatan 2
111 43 Stockholm, Sweden
Phone: +46(0)8 562 787 00

www.appliedvaluegroup.com

Applied Value Pulp & Paper Report

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

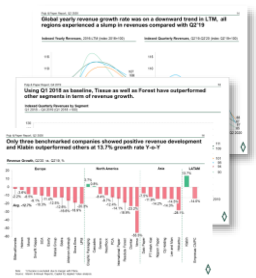
In this Pulp & Paper Report, Applied Value provides essential financial benchmarking focused on the latest quarter and 12-month period while also offering a brief update on the latest market trends.

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

Growth

Industry growth latest 4 quarters and LTM

Growth in the latest quarter per company segment, and region



EBITDA Margins

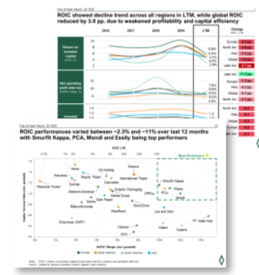
Average Industry EBITDA margin latest 4 quarters and LTM

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

ROIC

ROIC per region for the latest two 12-month periods

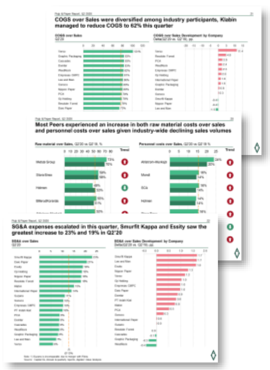
ROIC development per company and region for LTM



Operational Costs Breakdown

Operational Costs Breakdown latest quarter per company and region

Operational Costs development YoY per company and region



Market Trends

Pulp & Papers market price movements

Commodity prices and currency movements

Note: Included companies might differ from previous quarters

The report is based on the financial performance of 23 leading Pulp & Paper companies from Europe, North America, Latin America & Asia

Companies included in Financial Benchmarking in the Q1 2021 report

Market	Company	Revenue LTM (BEUR)	Country	Board	Paper	Tissue	Wood Products	Pulp	Other
Europe	Essity	11.3				✓			✓
	Stora Enso	8.6		✓	✓		✓	✓	✓
	UPM	8.5			✓		✓	✓	✓
	Metsä Group	5.2		✓	✓	✓	✓	✓	✓
	BillerudKorsnäs	2.4		✓	✓			✓	✓
	Södra	2.1					✓	✓	✓
	SCA	1.9		✓	✓	✓	✓	✓	✓
	Holmen	1.7		✓	✓		✓		✓
North America	International Paper	17.5		✓	✓		✓	✓	✓
	Packaging Corp. of America	5.8		✓	✓				✓
	Graphic Packaging	5.6		✓	✓				✓
	Sonoco	4.5		✓	✓				✓
	Cascades	3.4		✓	✓				✓
	Resolute Forest	2.5			✓	✓	✓	✓	✓
	Verso	1.0			✓			✓	✓
LAT AM	Suzano	4.9			✓			✓	✓
	Empresas CMPC	4.6		✓	✓		✓	✓	✓
	Klabin	1.9		✓	✓		✓	✓	✓
Asia	Oji Holding	10.5		✓	✓		✓		✓
	Nippon Paper	7.8		✓	✓		✓		✓
	Daio Paper	4.3		✓	✓				✓
	Shanying	3.6		✓	✓		✓	✓	✓
	Shandong Sunpaper	3.1		✓	✓			✓	✓
	Hokuetsu	1.7		✓	✓			✓	✓

Source: Capital IQ, Quarterly Reports

Rising pulp and paper prices positively impacted industry revenues and profitability, resulting in Y-o-Y improvements for most peers

Financial Benchmarking: Highlights in Q1 2021

Key takeaways

Revenue Growth

- During Q1 2021, the industry experienced an average revenue growth of 2% compared to the previous quarter, mainly driven by the upward trend in pulp and paper prices
- Most regions showed a positive development quarterly development in pandemic recovery while Europe showed a downward trend and Asia was relatively flattened compared with Q4 2020; North America and Latin America reported 6% and 4% growth respectively
- Resolute Forest, Metsä Group, Klabin and were top Y-o-Y performers with revenue growth of +26.7%, 11.7% and +33.8%

Profitability & Costs

- Quarterly EBITDA margins of pulp soared to 28% with 17 pp. growth Y-o-Y due to increased pulp prices; wood products and board segments faced sharp increases in profitability due to ascent of commodity prices
- Majority of European players managed to control their raw material cost in this quarter. SCA outperformed others in reducing both its raw material costs and personnel costs over Sales
- North American Resolute Forest presented the greatest Y-o-Y improvement in the region with an EBITDA over sales at 25%, 21 pp. improvement since Q1 20
- Company performance on COGS over sales varied between 51% and 94% with an industry average of 74%; average SG&A cost over sales fell slightly by 3 pp. compared to last quarter

Return On Invested Capital (ROIC)

- Global industry average ROIC declined by 0.7 pp. to 5.3% in LTM
- Europe and North America's ROIC dropped by 1.6 pp. and 1.5 pp. respectively
- Latin America maintained good performance and ended this quarter with a rise in ROIC at 1.4 pp. driven by continuous improvement in profitability

Top performers

LATAM

Source: RISI, S&P Capital IQ, Interim & Annual Reports.

Q1 2021 was characterized by increased demand for forest raw materials and increasing prices

Market Trends: Highlights in Q1 2021

Key takeaways

Industry News	› Demand for forest raw materials grew in the quarter while prices for most pulp and paper products increased › North American pulp markets have tightened considerably since January with lower supplies and demand heating. Unexpected mill downtime left producers with little extra stocks to meet a sharper-than-expected rise in demand › Containerboard experienced strong demand and short supply in Q1; most board maker companies postponed maintenance last year because of historic surge in June to the yearend, resulting in mill downtimes this spring
Pulp Prices	› Pulp prices increased sharply across all regions in Q1’21; prices in Northern Europe, US East, and Asia are up at approx. 35%, 26% and 65% during this quarter as demand greater than capacity › Through the first quarter, most companies announced higher pulp prices for multiple reasons including rises in raw material, energy, and freight costs. As seasonal spring mill downtime started future pulp prices may remain high in the next few months since mills have the upper hand in pricing leverage
Graphic Paper & Packaging	› After a full year downward price trends in 2020, graphic paper prices showed an upward trend in Q1 2021, but prices have still not fully recovered. Demand for graphic, publication and magazine papers decreased ~10% from Q1 2020 › Demand for Packaging paper was strong in the quarter with support from consumable goods and e-commerce
Commodities & Currencies	› Oil prices increased by ~20% during the quarter and ended at ~62 USD/barrel in Q1’21 › Natural gas prices experienced rapid growth with 125% Europe and 43% United States › Most currencies kept appreciation against USD in this quarter: EUR, GBP, CNY and SEK were up by 8.2pp., 11.9 pp., 7.6 pp., and 13.7 pp., respectively; only BRL were still down by -6.3 pp. but showed an upward trend compared to last quarter

Source: RISI, Interim & Annual Reports.

Applied Value Pulp & Paper Report

Rising pulp and paper prices positively impacted industry revenues and profitability, resulting in Y-o-Y improvements for most peers

Financial Benchmarking: Highlights in Q1 2021

Key takeaways

Revenue Growth

- During Q1 2021, the industry experienced an average revenue growth of 2% compared to the previous quarter, mainly driven by the upward trend in pulp and paper prices
- Most regions showed a positive development quarterly development in pandemic recovery while Europe showed a downward trend and Asia was relatively flattened compared with Q4 2020; North America and Latin America reported 6% and 4% growth respectively
- Resolute Forest, Metsä Group, Klabin and were top Y-o-Y performers with revenue growth of +26.7%, 11.7% and +33.8%

Profitability & Costs

- Quarterly EBITDA margins of pulp soared to 28% with 17 pp. growth Y-o-Y due to increased pulp prices; wood products and board segments faced sharp increases in profitability due to ascent of commodity prices
- Majority of European players managed to control their raw material cost in this quarter. SCA outperformed others in reducing both its raw material costs and personnel costs over Sales
- North American Resolute Forest presented the greatest Y-o-Y improvement in the region with an EBITDA over sales at 25%, 21 pp. improvement since Q1 20
- Company performance on COGS over sales varied between 51% and 94% with an industry average of 74%; average SG&A cost over sales fell slightly by 3 pp. compared to last quarter

Return On Invested Capital (ROIC)

- Global industry average ROIC declined by 0.7 pp. to 5.3% in LTM
- Europe and North America's ROIC dropped by 1.6 pp. and 1.5 pp. respectively
- Latin America maintained good performance and ended this quarter with a rise in ROIC at 1.4 pp. driven by continuous improvement in profitability

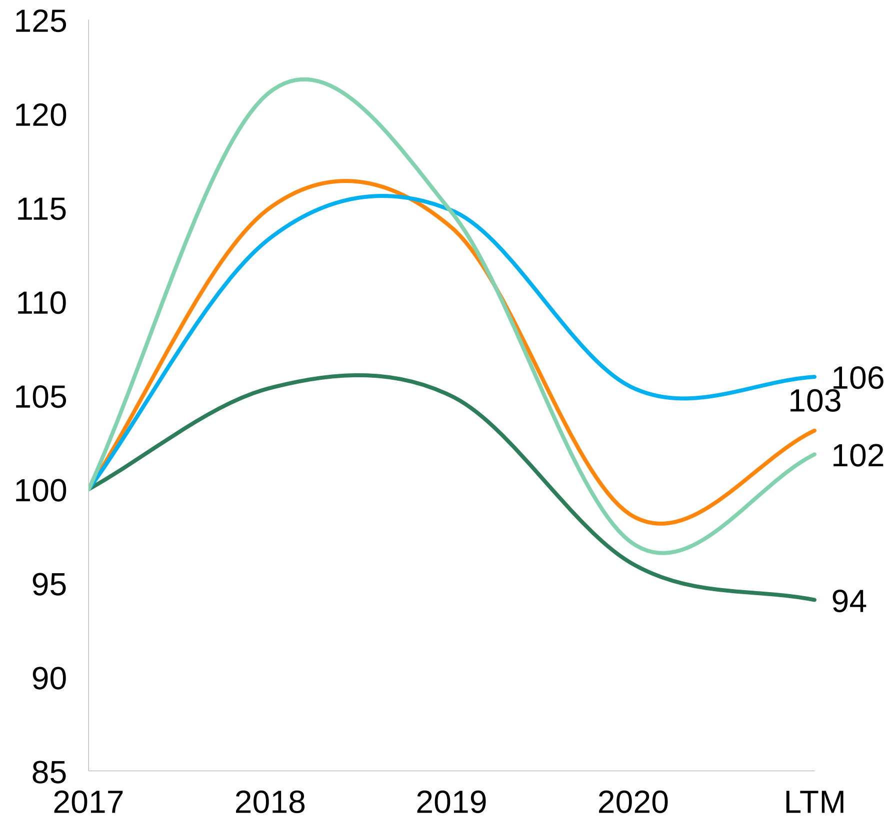
Top performers

LATAM

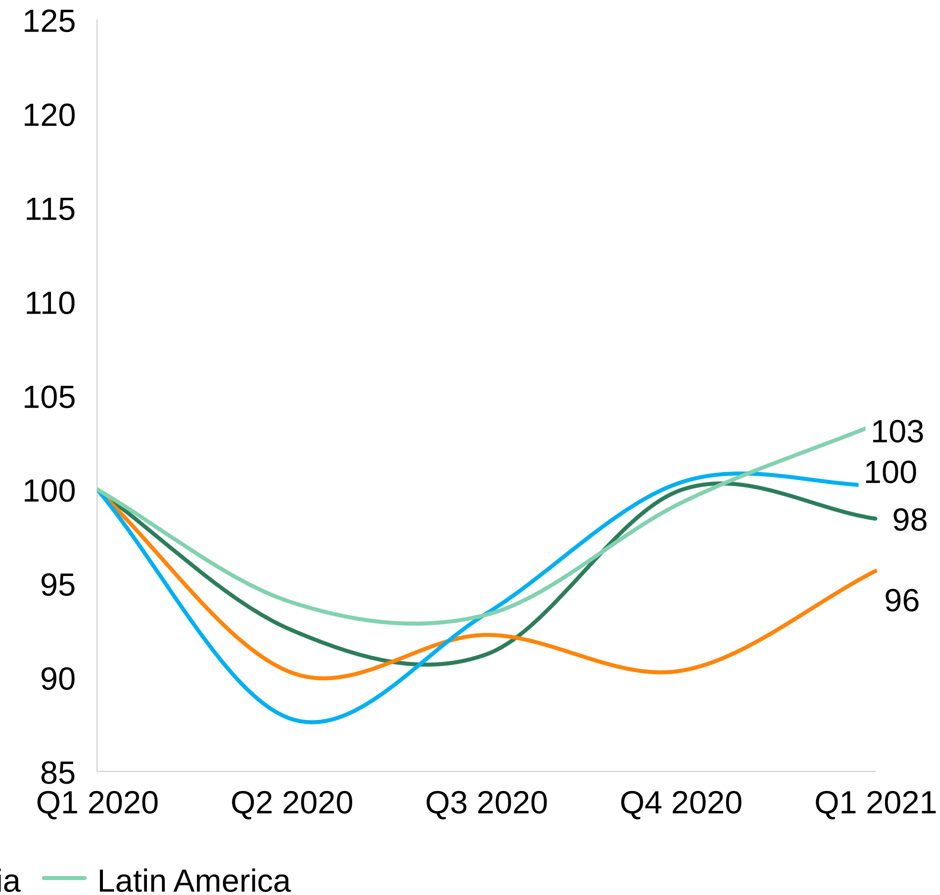
Source: RISI, S&P Capital IQ, Interim & Annual Reports.

Most regions yearly revenue growth rates trended upwards in LTM while quarterly revenue performance varied among regions

Indexed Yearly Revenues, 2017-LTM (index 2017=100)



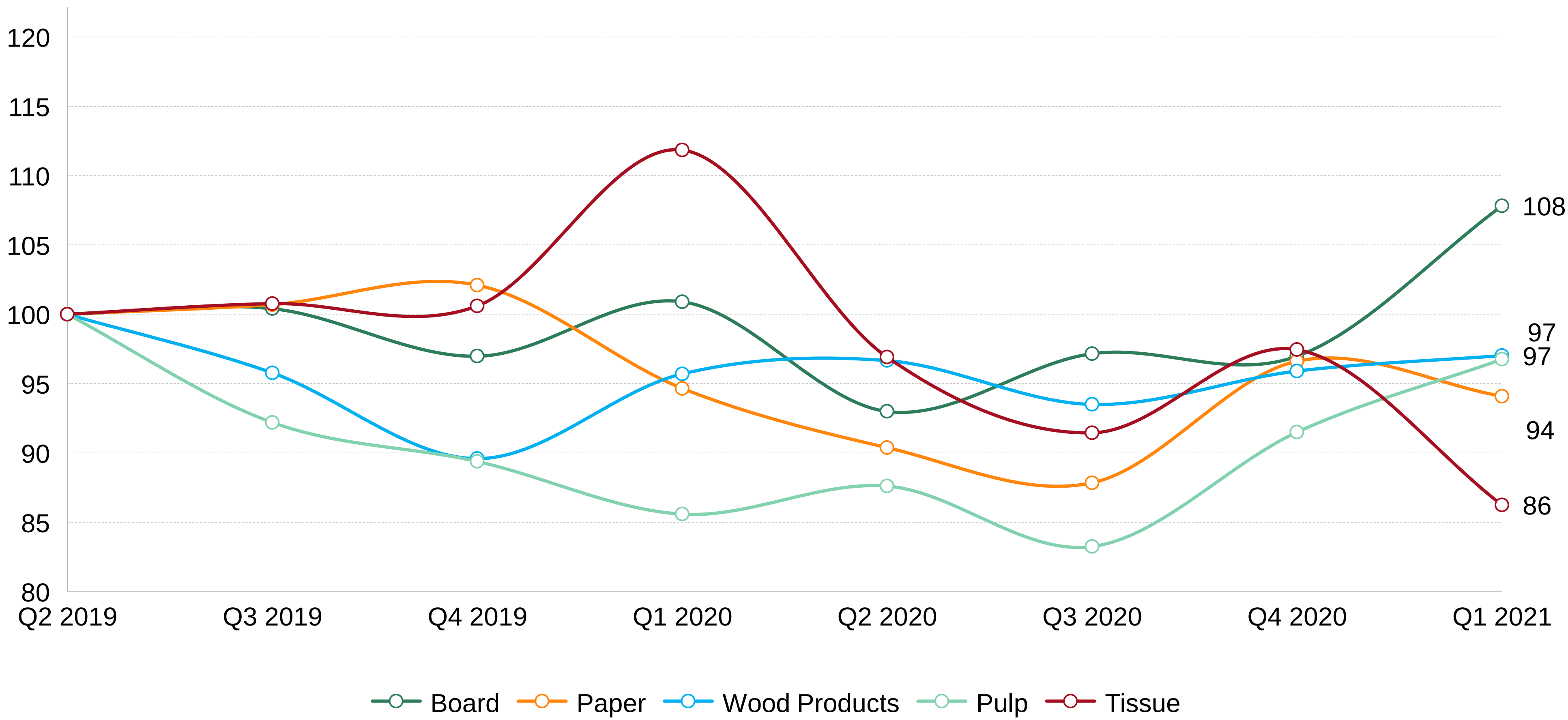
Indexed Quarterly Revenues, Q1’20-Q1’21 (index Q1’20=100)



Source: S&P Capital IQ, Interim & Annual Reports, Applied Value Analysis.

Due to pulp prices increasing, most segments' revenues except tissue saw an increase in Q1 2021 compared to prior quarter

Indexed Quarterly Revenues by Segment, Q2'19 – Q1'21 (Q2'19 =100)

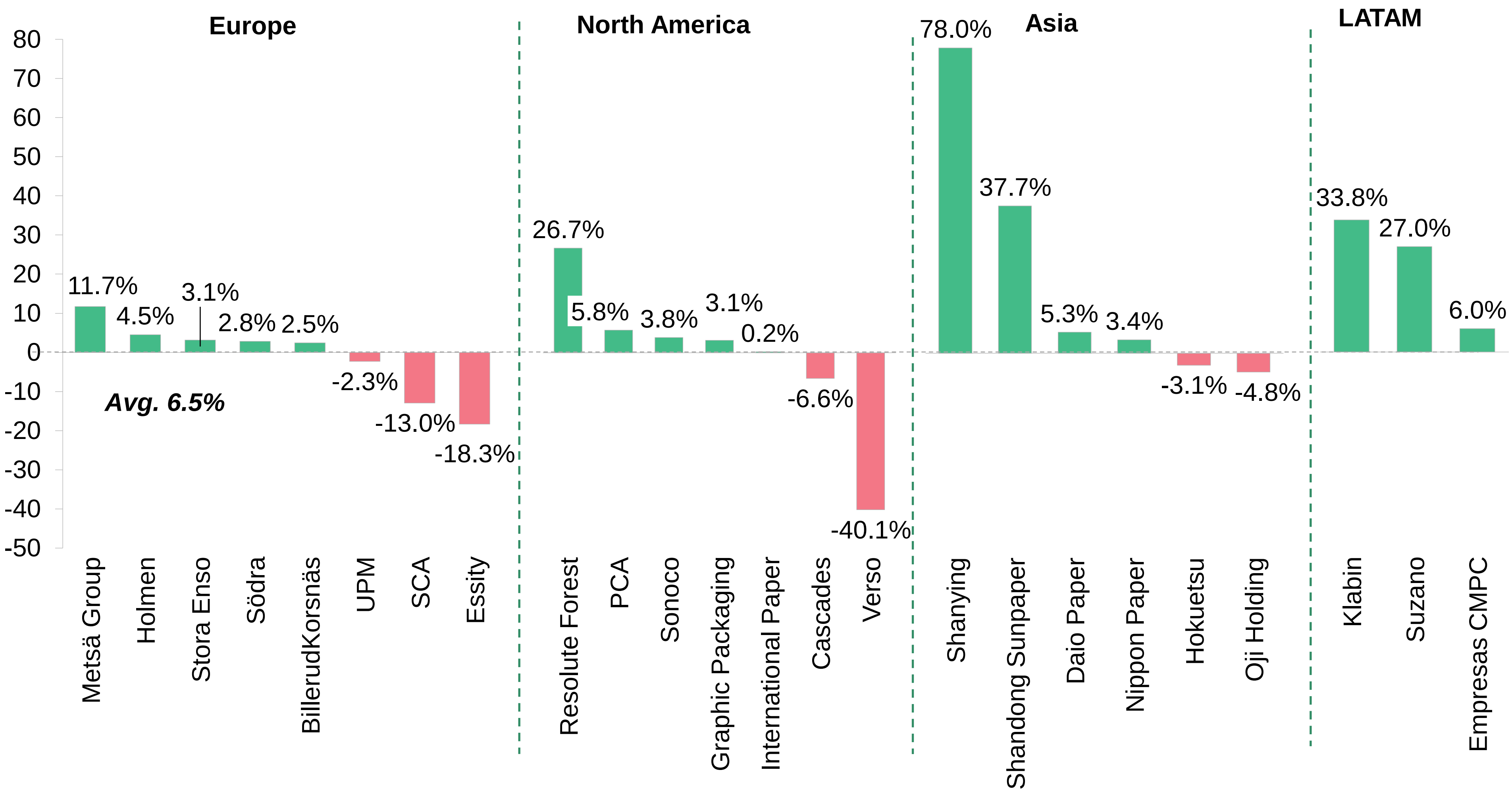


Note: The included companies differ from previous quarter

Source: S&P Capital IQ, Applied Value Analysis.

Most benchmarked companies showed positive Y-o-Y revenues with Metsä, Resolute, Shanying and Klabin standing out as regional winners

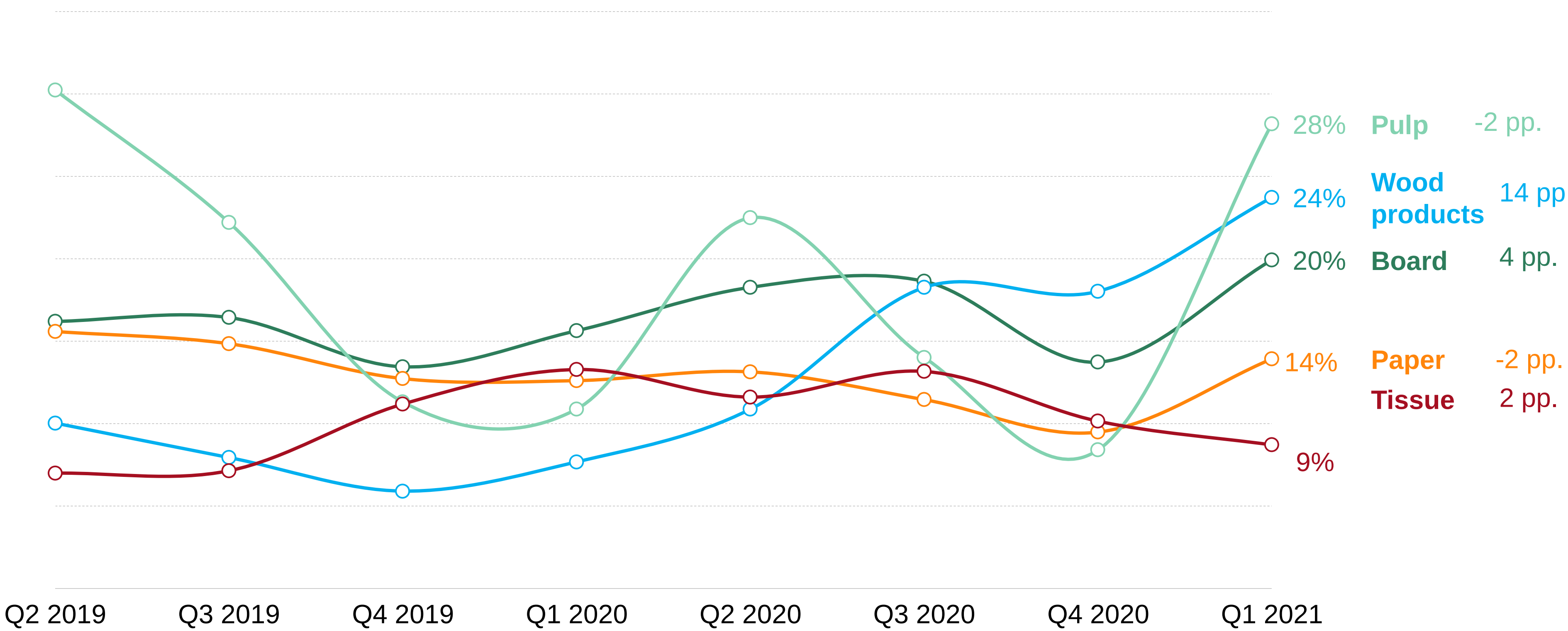
Revenue Growth, Q1'21 vs. Q1'20, %



Note: 1) Shanying and Shandong revenue growth largely due to COVID impact recovery
Source: Interim & Annual Reports, S&P Capital IQ, Applied Value analysis.

Pulp segment EBITDA margin soared in this quarter since market pulp prices increased in January through March

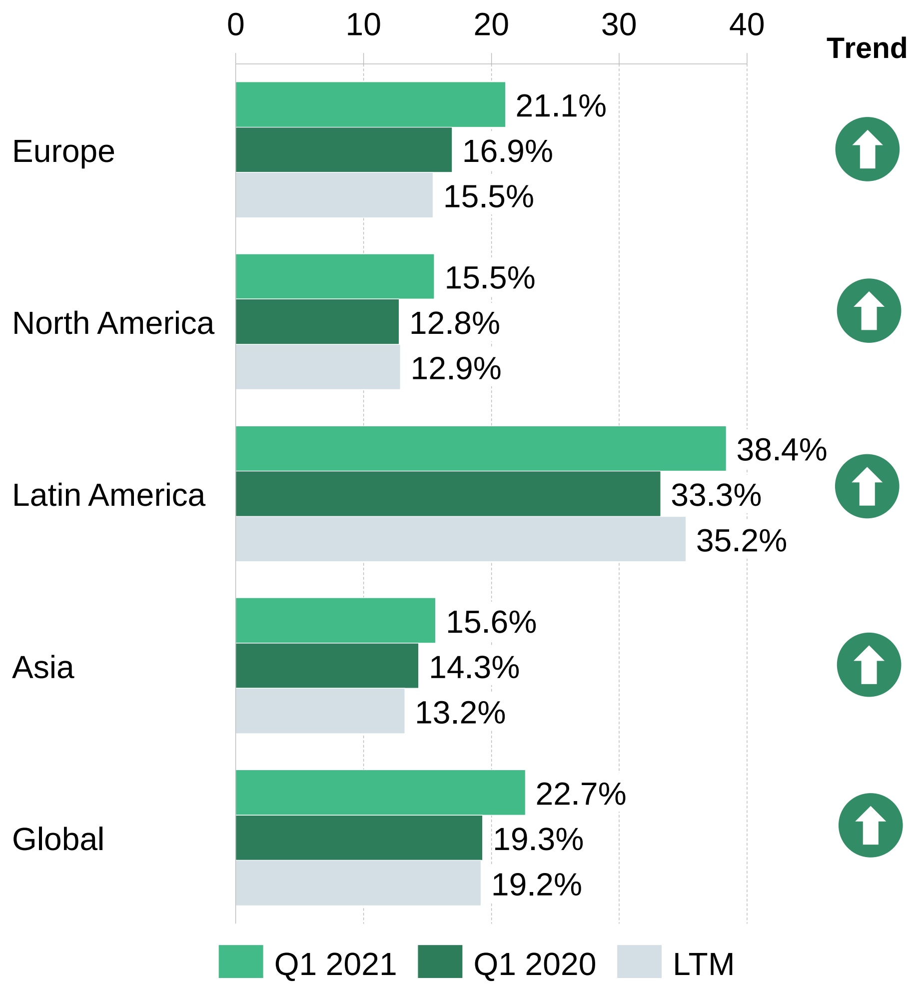
Quarterly EBITDA Margin by segment, Q2’19 – Q1’21, %



Source: S&P Capital IQ, Applied Value Analysis.

EBITDA margins increased among all regions and global margins increased by 3.4 pp. to 22.7% in Q1’21 compared to Q1’20

EBITDA margin by region, Y-o-Y

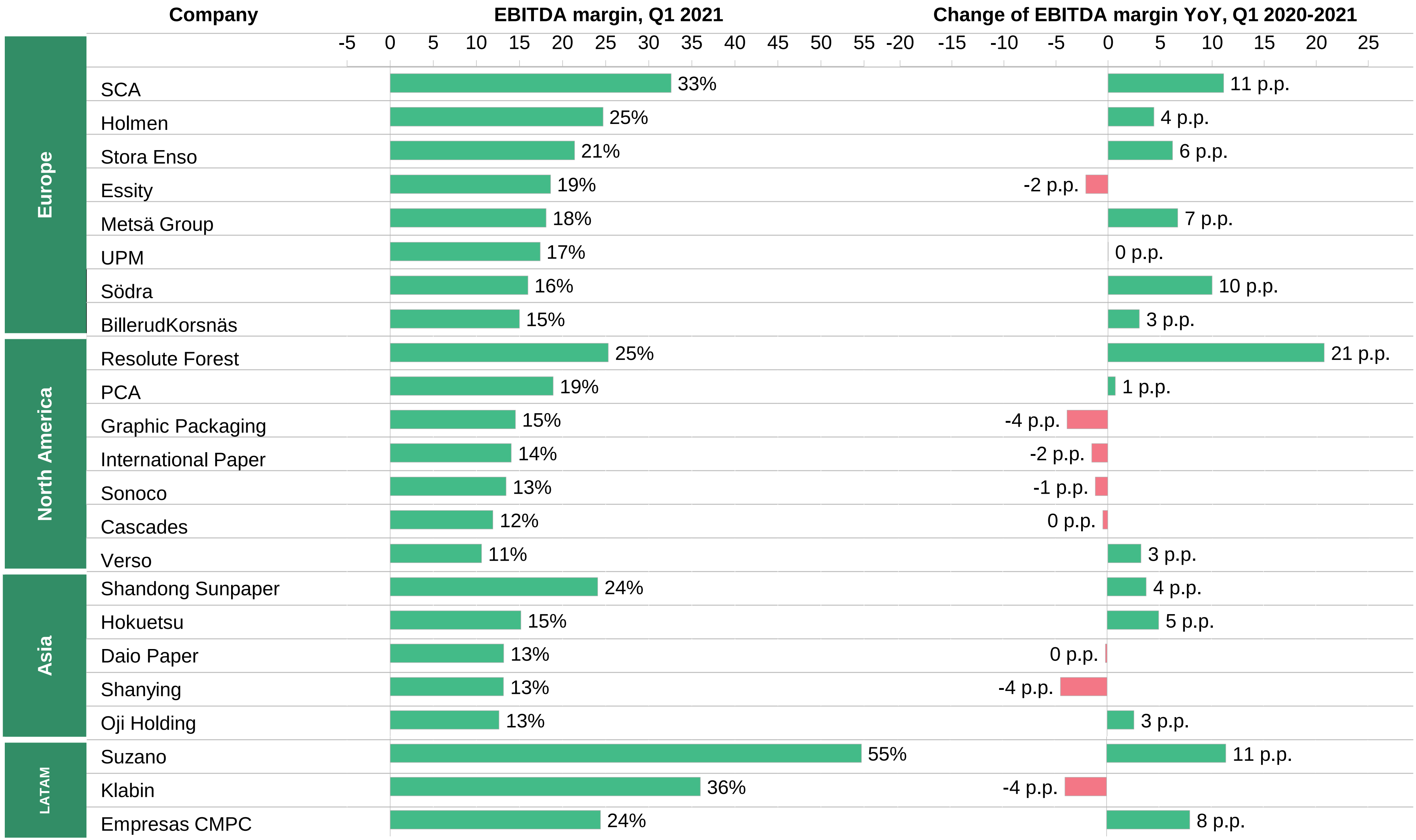


Source: S&P Capital IQ, RISI, Interim & Annual Reports, Applied Value Analysis.

Industry News

- **DS Smith** invests **Euro 16.7 million** to expand and modernize its Arnstadt mill in Germany. The plant specializes primarily in innovative packaging solutions for the **e-commerce and FMCG sectors**
- **Graphic Packaging** has partnered with **Estrella Damm** to replace its plastic shrink wrap packaging, equivalent to **99 tonnes annually**, with paperboard alternatives
- **ABB** will provide the paperboard producer **Metsä Board** with its L&W Autoline automated paper testing solution at five of the group’s mills in Finland: Kemi, Kyro, Simpele, Tako and Äänekoski
- **UPM Plywood, Arctic Astronautics and Huld** announce joint mission to launch first-ever wooden satellite into Earth’s orbit by end of 2021
- **Stora Enso** will stop production of **dissolving pulp (DP)** at its **Enocell** mill in Finland and exit the DP market globally in line with its updated strategic plans

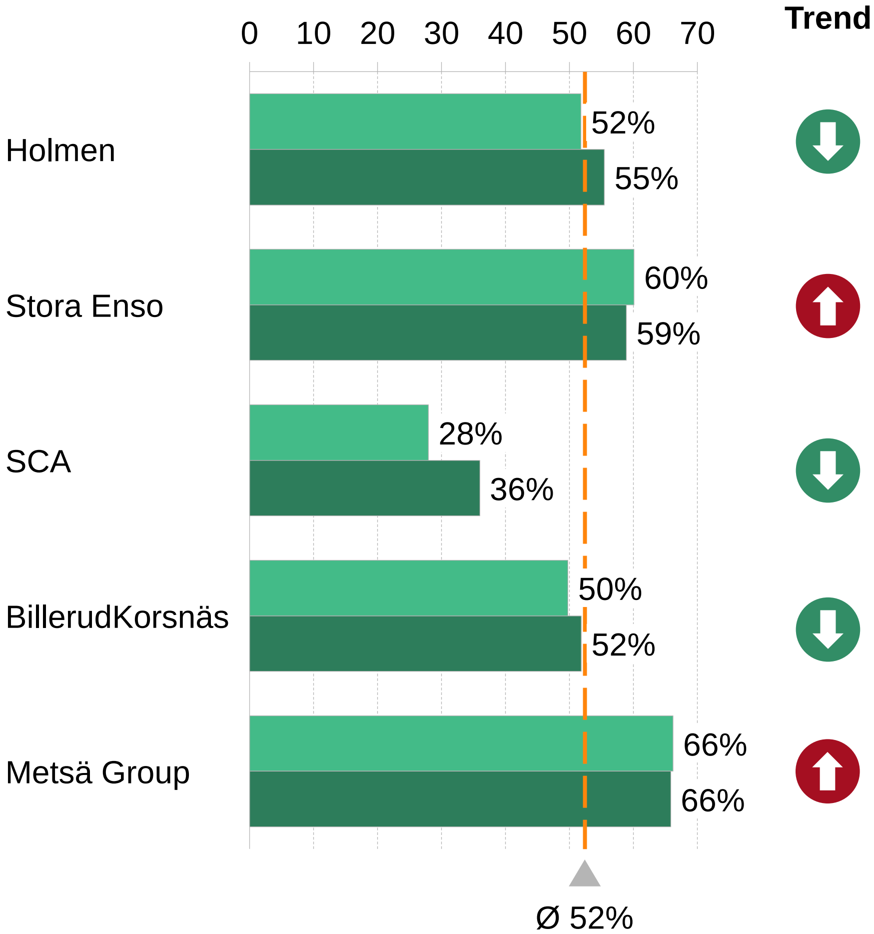
Most industry players displayed upward profitability trends as SCA, Södra and Resolute presented particularly strong Y-o-Y performance



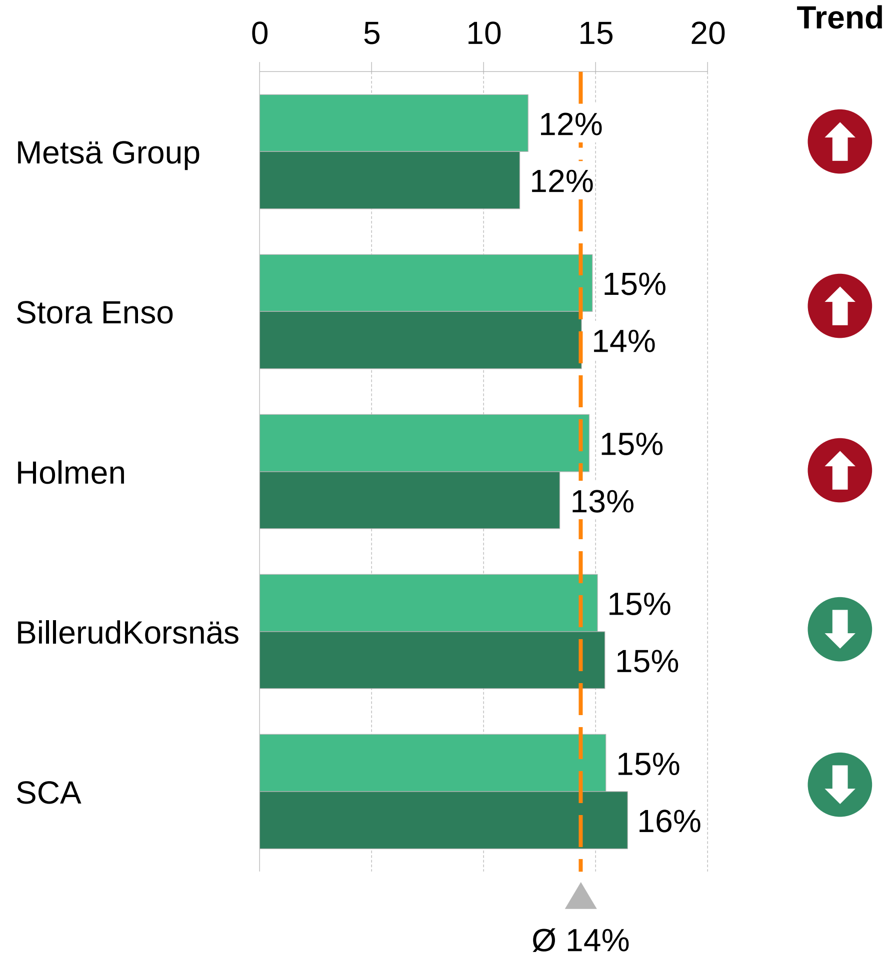
Source: Interim & Annual Reports, S&P Capital IQ, Applied Value analysis.

European peers improved raw material costs over sales but experienced slight increases in personnel costs over sales

Raw material over Sales
Q1'21 vs Q1'20, %



Personnel costs over Sales
Q1'21 vs Q1'20 %

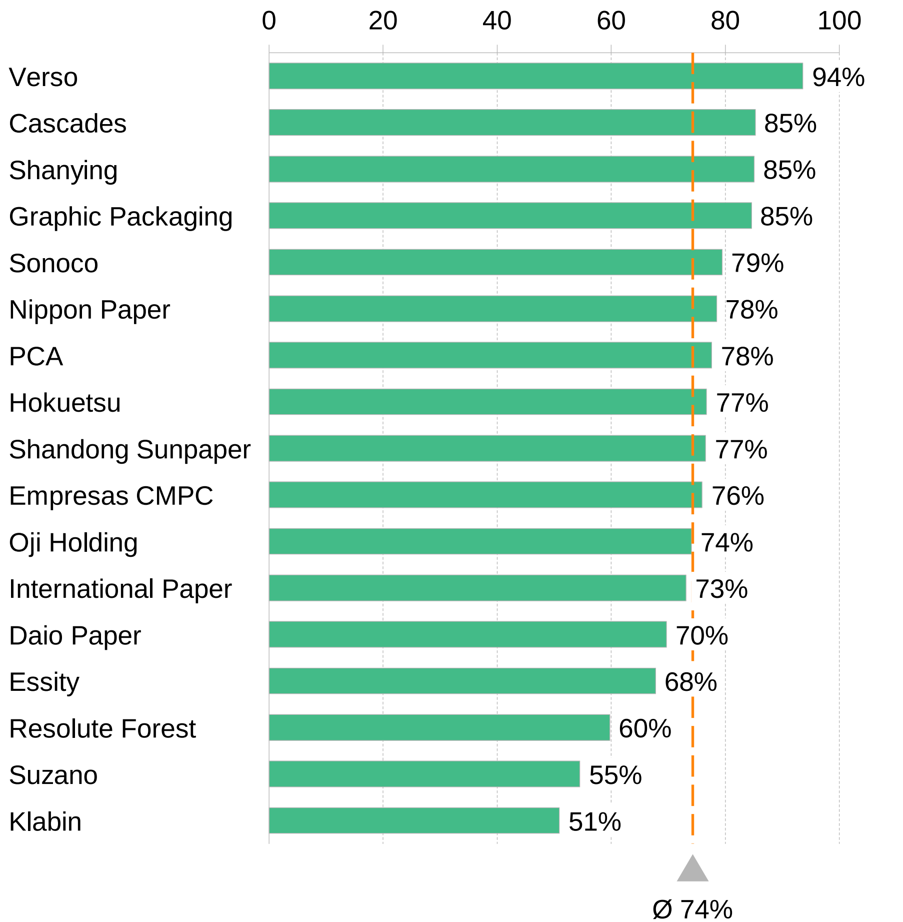


Q1 2021 Q1 2020

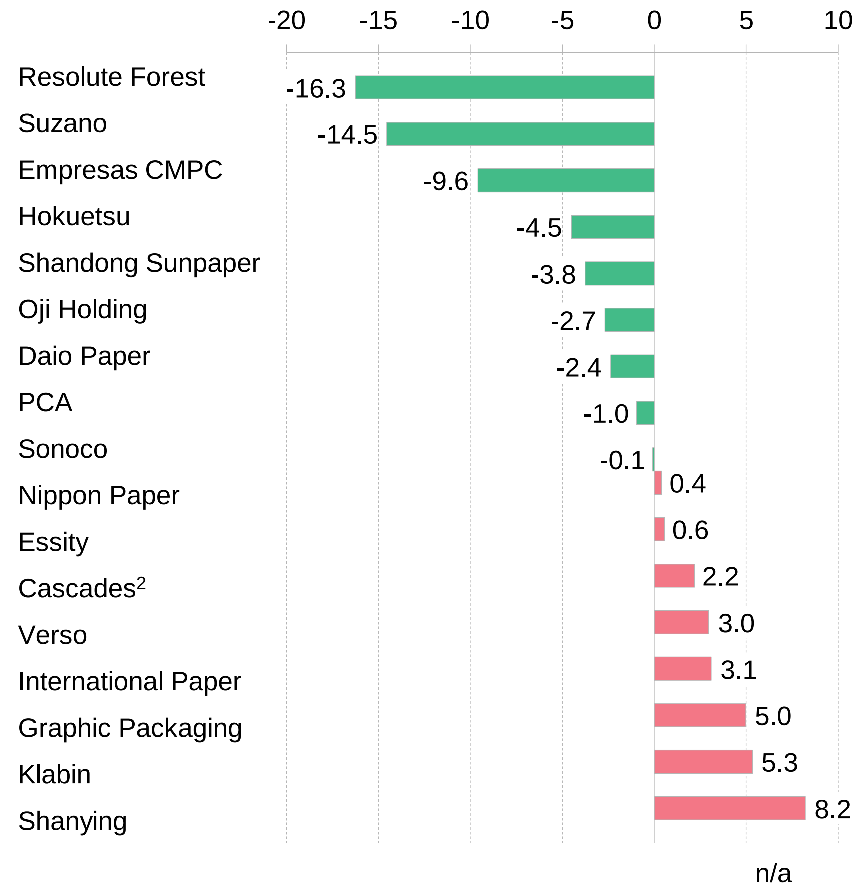
Note: Other incomes not included
Source: S&P Capital IQ, Interim & Annual Reports, Applied Value Analysis.

COGS over Sales performance varied among industry players and Resolute Forest had the largest decrease due to rising sales volumes

COGS over Sales
Q1'21



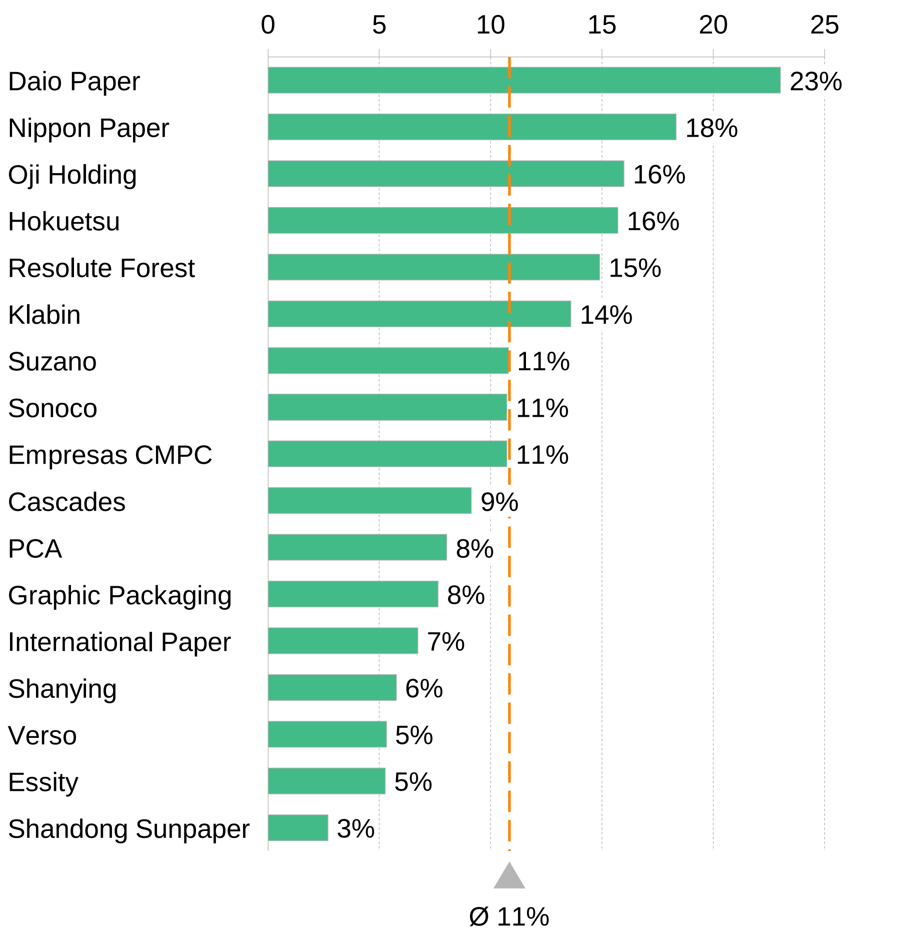
COGS over Sales Development by Company
Delta(Q1'21 vs. Q1'20), pp.



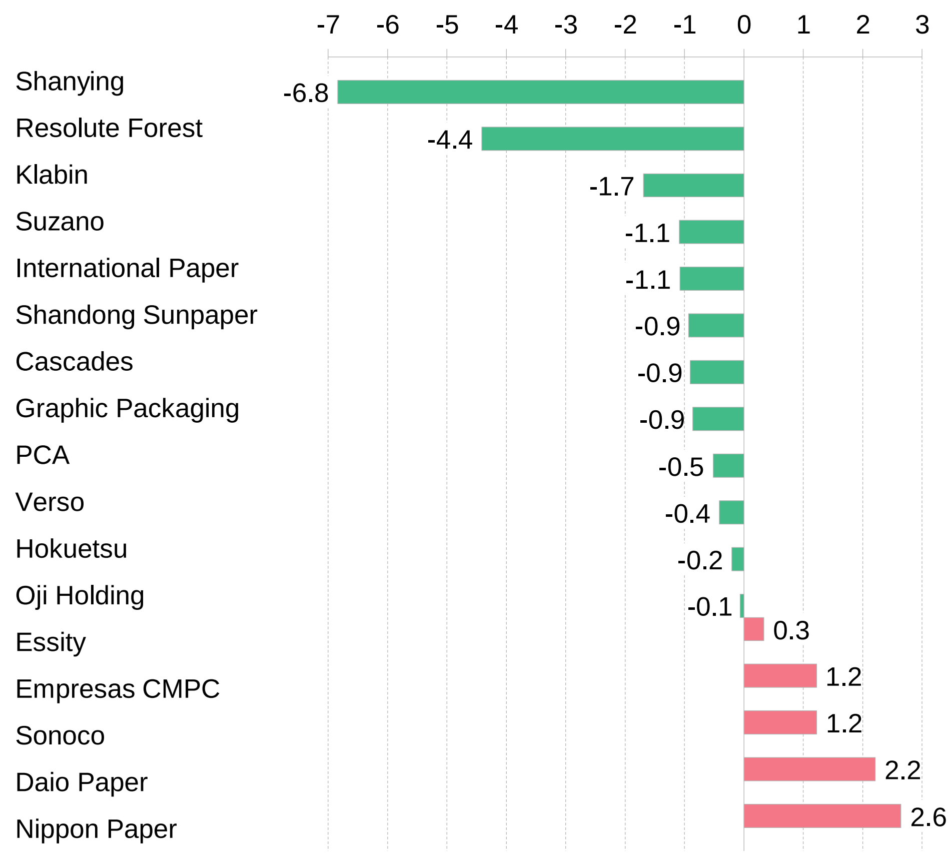
Source: S&P Capital IQ, Interim & Annual Reports, Applied Value Analysis.

Most companies managed to reduce their SG&A costs in the quarter, and Shanying saw the largest decrease by 6.8 pp. to 6%

SG&A over Sales
Q1'21

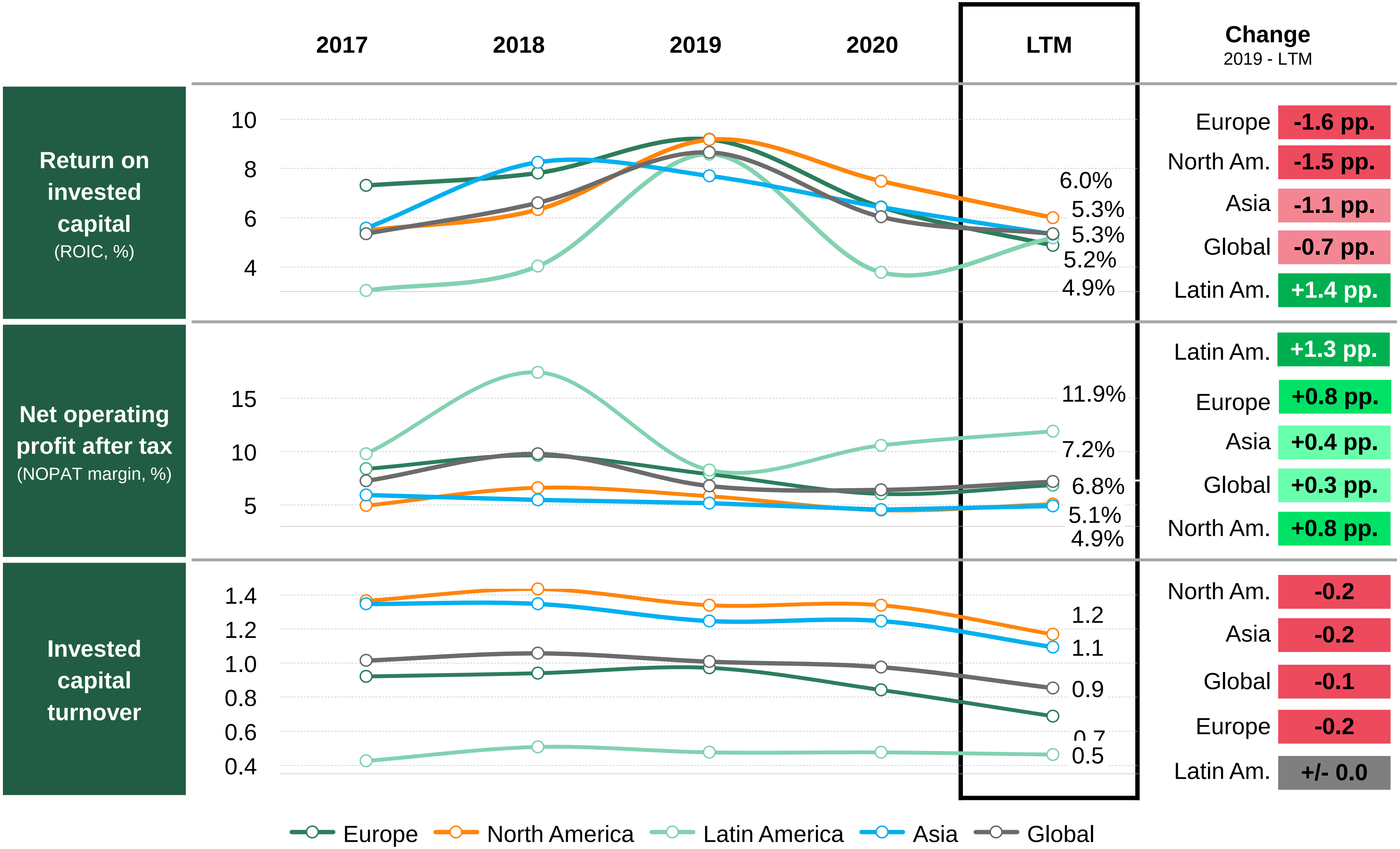


SG&A over Sales Development by Company
Delta(Q1'21 vs. Q1'20), pp.



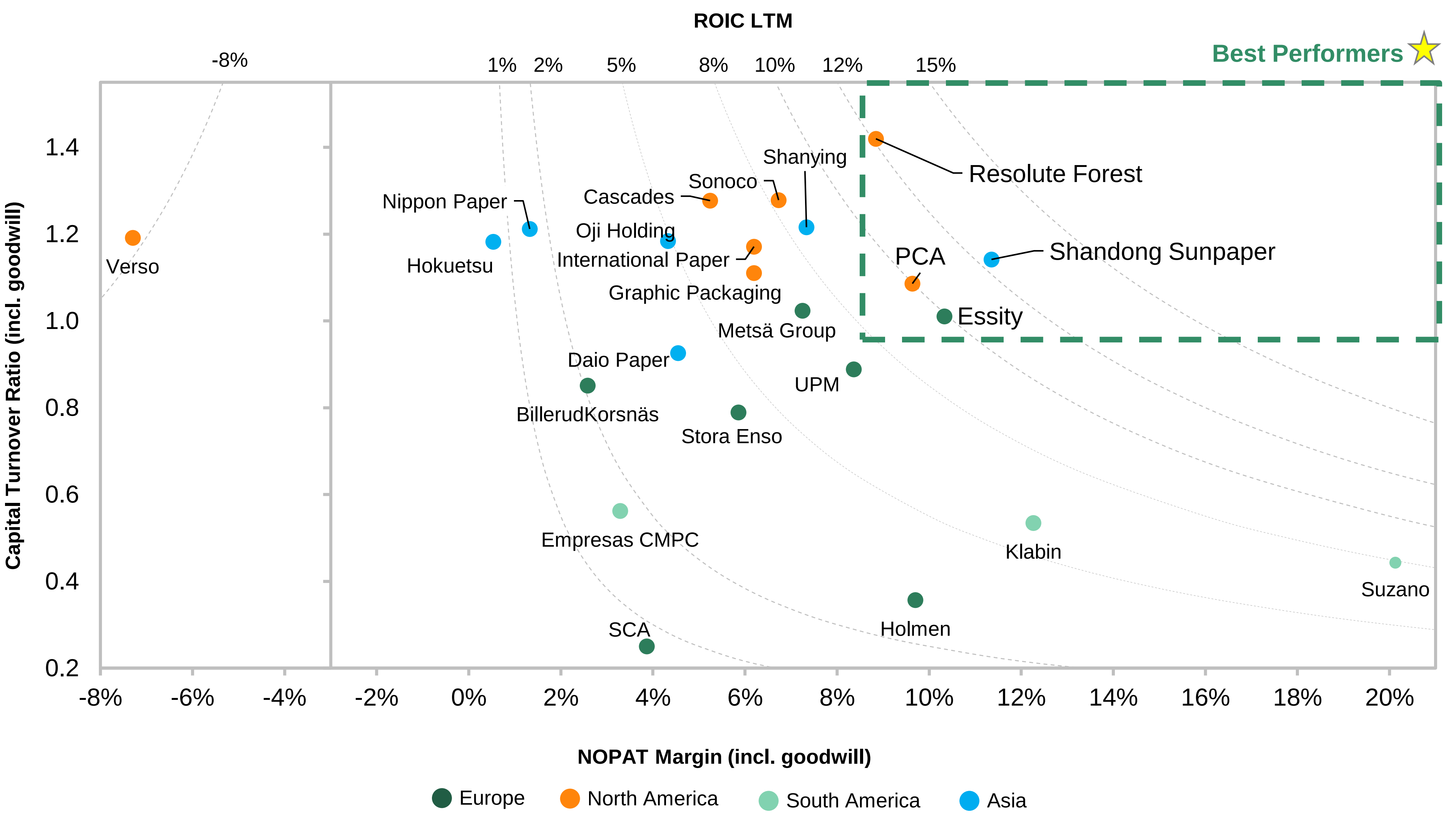
Source: S&P Capital IQ, Interim & Annual Reports, Applied Value Analysis.

ROIC declined across most regions in LTM except Latin America, but all regions displayed positive performance in profitability



Source: S&P Capital IQ, Interim & Annual Reports, Applied Value Analysis.

ROIC performances varied between -8% and 12% over the last 12 months with Shangdong Sunpaper, Resolute, PCA, and Essity as top performers



Notes: ROIC = Return on Invested Capital (actual return that the company has generated after tax).
Source: S&P Capital IQ, Interim & Annual Reports, Applied Value Analysis.

Applied Value Pulp & Paper Report

Q1 2021 was characterized by increased demand for forest raw materials and increasing prices

Market Trends: Highlights in Q1 2021

Key takeaways

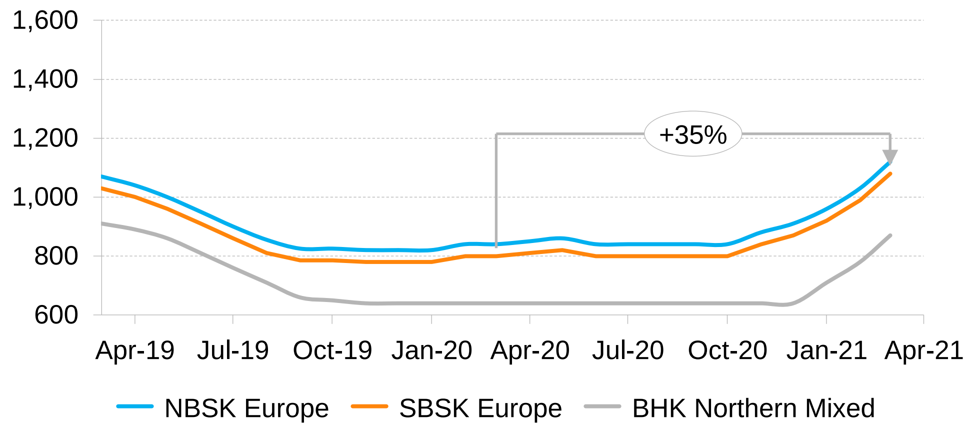
Industry News	› Demand for forest raw materials grew in the quarter while prices for most pulp and paper products increased › North American pulp markets have tightened considerably since January with lower supplies and demand heating. Unexpected mill downtime left producers with little extra stocks to meet a sharper-than-expected rise in demand › Containerboard experienced strong demand and short supply in Q1; most board maker companies postponed maintenance last year because of historic surge in June to the yearend, resulting in mill downtimes this spring
Pulp Prices	› Pulp prices increased sharply across all regions in Q1'21; prices in Northern Europe, US East, and Asia are up at approx. 35%, 26% and 65% during this quarter as demand greater than capacity › Through the first quarter, most companies announced higher pulp prices for multiple reasons including rises in raw material, energy, and freight costs. As seasonal spring mill downtime started future pulp prices may remain high in the next few months since mills have the upper hand in pricing leverage
Graphic Paper & Packaging	› After a full year of downward price trends in 2020, graphic paper prices showed an upward trend in Q1 2021, but prices have still not fully recovered. Demand for graphic, publication and magazine papers decreased ~10% from Q1 2020 › Demand for Packaging paper was strong in the quarter with support from consumable goods and e-commerce
Commodities & Currencies	› Oil prices increased by ~20% during the quarter and ended at ~62 USD/barrel in Q1'21 › Natural gas prices experienced rapid growth with 125% Europe and 43% United States › Most currencies kept appreciation against USD in this quarter: EUR, GBP, CNY and SEK were up by 8.2pp., 11.9 pp., 7.6 pp., and 13.7 pp., respectively; only BRL were still down by -6.3 pp. but showed an upward trend compared to last quarter

Source: RISI, Interim & Annual Reports.

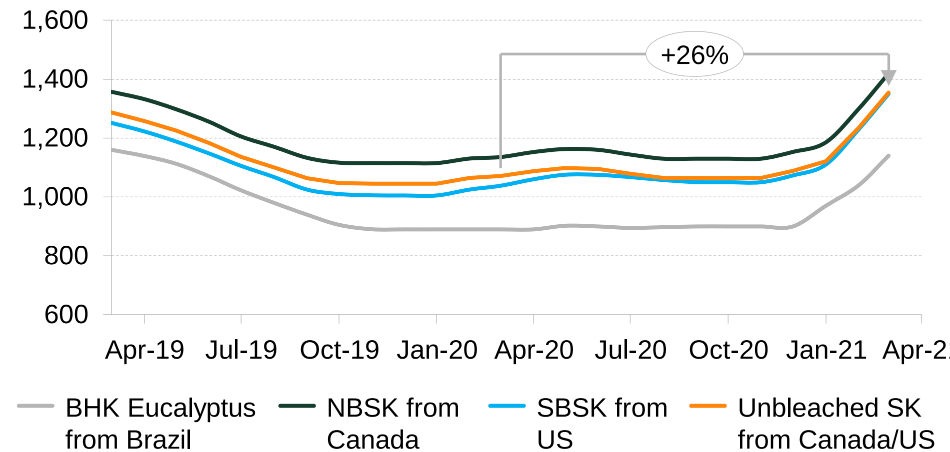
Global pulp prices increased by 35-65% Y-O-Y and experienced a sharp increase across all regions in Q1 2021

Global Pulp Price Development, Last 24 Months

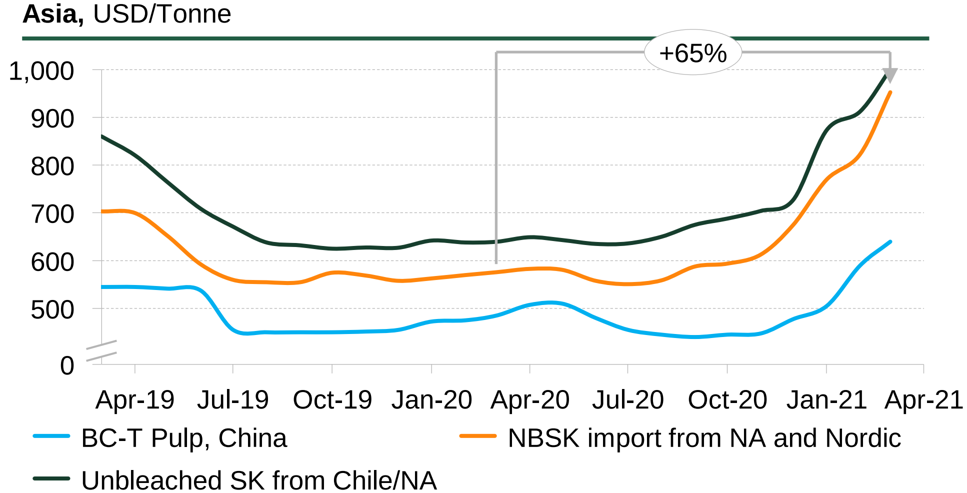
Northern Europe, USD/Tonne



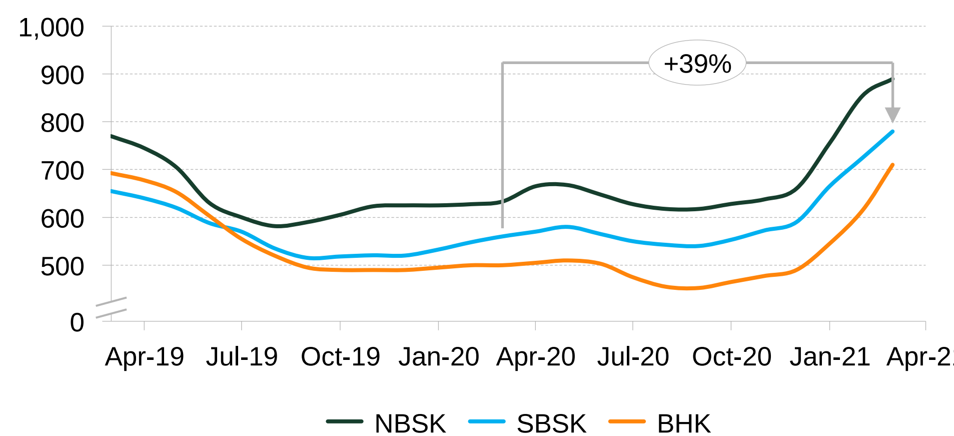
US East, USD/Tonne



Asia, USD/Tonne



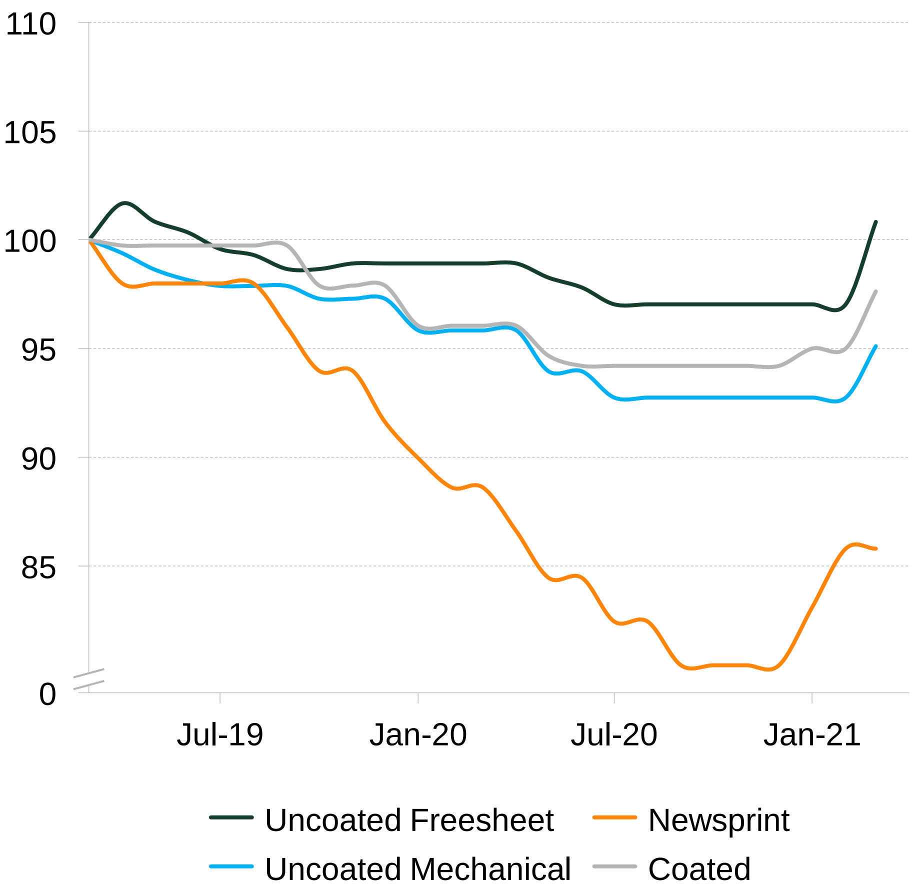
US East spot prices, USD/Tonne



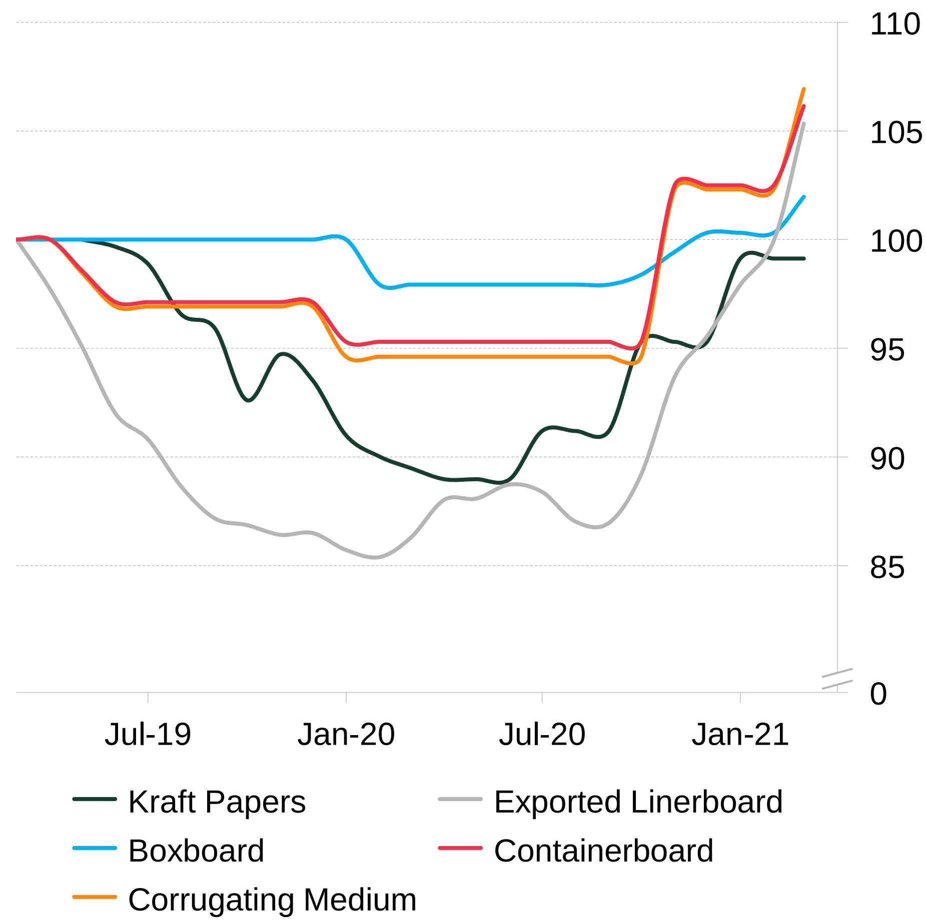
Note: Midpoint price levels.
Source: RISI PPI Pulp & Paper Week.

Most packaging paper prices and graphic paper prices soared in this quarter while kraft papers prices were relatively flat

Graphic paper prices
Avg. indexed price per product segment, USD/ton



Packaging paper prices
Avg. indexed price per product segment, USD/ton

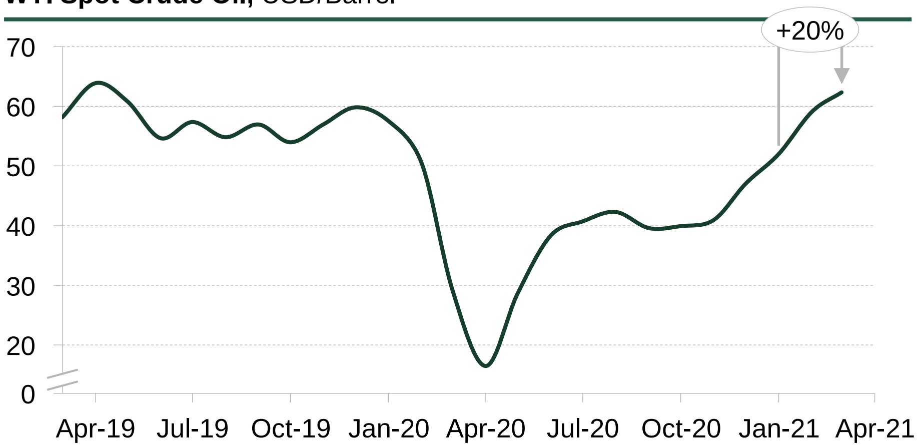


Note: Midpoint price levels.
Source: RISI PPI Pulp & Paper Week.

Crude oil prices increased by 20% and most currencies continued their appreciation against USD in Q1 2021

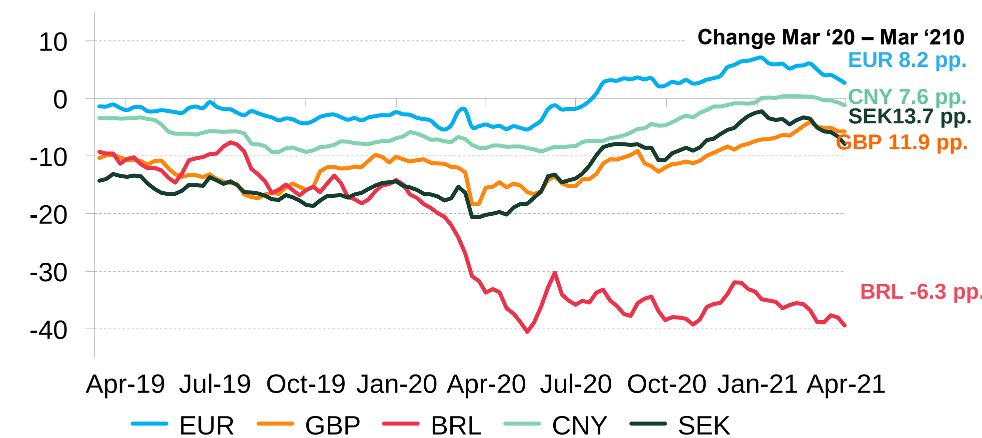
Commodity & Currency Price Development, Last 24 months

WTI Spot Crude Oil, USD/Barrel



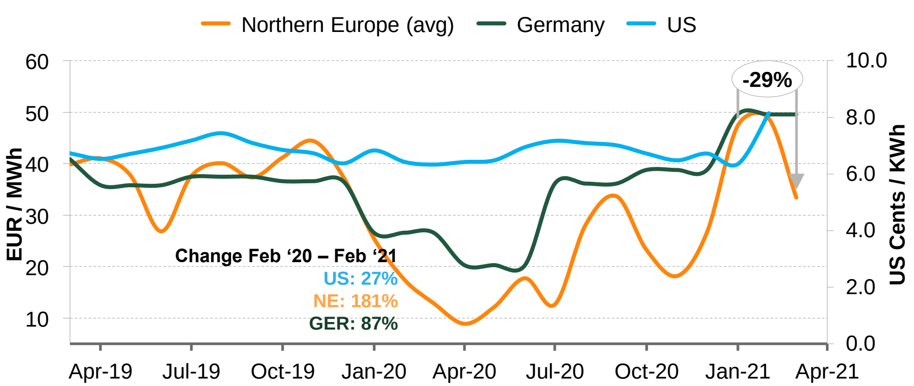
Source: US Energy Information Administration.

Currency appreciation against USD, %



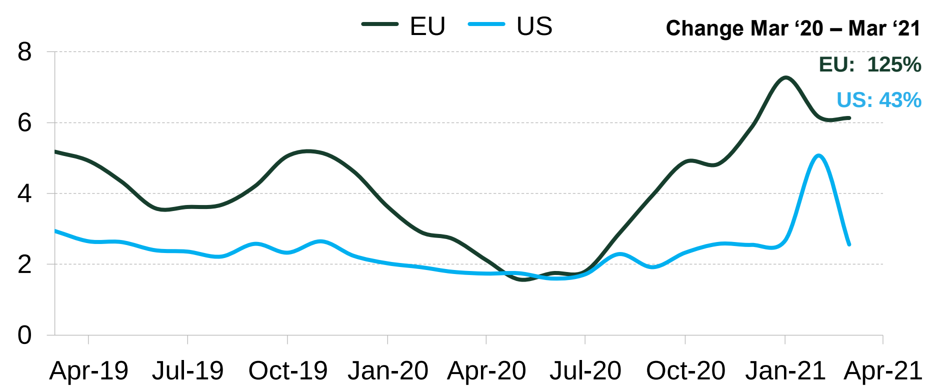
Source: S&P Capital IQ.

Electricity



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

Natural Gas, USD/mmbtu



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

Applied Value Pulp & Paper Report

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

1997

Background as an internal change agent in the **Kinnevik Group**…

KINNEVIK

…today, a hands-on consultancy supporting clients **across industries**

2021

Industries of Expertise

- Chemicals and Process
- Industrial & Engineering
- Telecom and Media
- Consumer Goods
- Automotive

Applied Value Group

Investments	Management Consulting	Social Impact

Selected portfolio companies

Human Care, CosmosID, rivermeadow, Bake My Day, Division 5 Inc Steel Fabrication, Kaunis Iron, PNP Stålhallar, Sourcing Value, Söderfors Steel

APPLIED VALUE

CIO, Hand in Hand, Straight Ahead Ministries, World Vision, Exodus, Opportunity International, Wenham House, KRIS, Code for Life

ROI driven — *Fact-based* — *Practical over theoretical* — *Hands-On* — *Global perspectives*

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

Selected clients

GM, AHLSTROM MUNKSJÖ, ERICSSON, SCA, Facebook, Epiroc, Whirlpool, BILLERUDKORSNÄS, VERSO, SONY, BMW, FRESENIUS MEDICAL CARE, telenor, B/S/H/, DAIMLER, Vestas, FCA FIAT CHRYSLER AUTOMOBILES, WestRock

Applied Value Offices and Footprint

Countries where Applied Value has performed case work over the last ten years

Existing Office

Office Expansion

Stockholm	New York	Helsinki	San Francisco	Shanghai
Kungsgatan 2 PO Box 5047 111 43 Stockholm Sweden	Empire State Building 350 Fifth Ave New York, 10118 USA	Old Church Park Lönnrotinkatu 5 00120, Helsinki Finland	Pier 35, 1454 The Embarcadero San Francisco, CA 94133 USA	Tower A, NA Plaza No. 518 Kunming Road, Shanghai, 200041 P.R. China
+46 8 562 787 00	+1 646 336 4971	+358 40 84 110 60	+46 7 042 692 77	+86 21 5213 6390

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

Lean Growth

Focus
- ✓ Define strategic focus
- ✓ Excel in key capabilities
- ✓ Use partners for non-core activities

Simplicity
- ✓ Reduce complexity
- ✓ Simplify and standardize processes, organization and supply chain

Speed
- ✓ Set targets
- ✓ Measure and improve
- ✓ Reduce Market-Customer-Cash Time

Example Offerings

- **Strategy & Organization -** Go-to-Market Strategy, G&A Productivity, Capital Management, Digitalization & IT
- **Commercial Excellence & Pricing -** True Profitability, Portfolio Optimization, Sales Efficiency, Pricing Model, Governance
- **Sourcing & Procurement -** Sourcing Strategy, Negotiations, Risk Management, SRM, Competence Development
- **Supply Chain & Operations -** Supply Chain Strategy, Inventory Management, Operational Excellence
- **Product & Innovation -** Portfolio Profitability, VA/VE, R&D Strategy & Efficiency, Product Lifecycle Management
- **Mergers & Acquisitions -** Commercial Due Diligence, Operational Due Diligence, Post-Merger Integration

Applied Value has extensive experience in the Pulp & Paper industry and has helped several businesses achieve tangible results

Example of client engagements

Area	Results
Turnaround	• EBIT improved from **4% to 20%** over a 4-year period for an Integrated Pulp & Paper company • Capital Turnover Ratio was improved from 0.55 to 0.9
Commercial Excellence	• **Market disruptive value prop**, charging for service and complexity, developed and implemented • Potential of **350 SEK/ton** identified (excluding organizational streamlining enabled by the concept)
Sales Efficiency & Effectiveness	• Potential **SG&A reduction of 15%** identified for a global Pulp & Paper company • Service level differentiation and customer categorization were enablers
True Profitability	• True profitability findings enabled **EBIT improvement of 5 ppt** for a leading Paper division • Actions included portfolio rationalization, new pricing model and customer segmentation
Pricing Excellence	• A **fact-based pricing tool** was developed for a leading Packaging company • True costs and customer value were considered in the market disruptive pricing concept
Production Efficiency	• **Sheeting capacity increased by 15%** over a 3-month period • Key actions were related to engagement and discipline, planning and material flows
Supply Chain Optimization	• Variable cost reduction of **500 SEK / ton** achieved by supply chain optimization • Addressing sub-optimizations and optimizing the production cycle were key initiatives
Working Capital Efficiency	• Potential **gross margin improvement of ~5%** for a Global Wood Supply company • Inventory reduction potential of 40% identified and concrete action plan handed over

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 50+ engagements 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

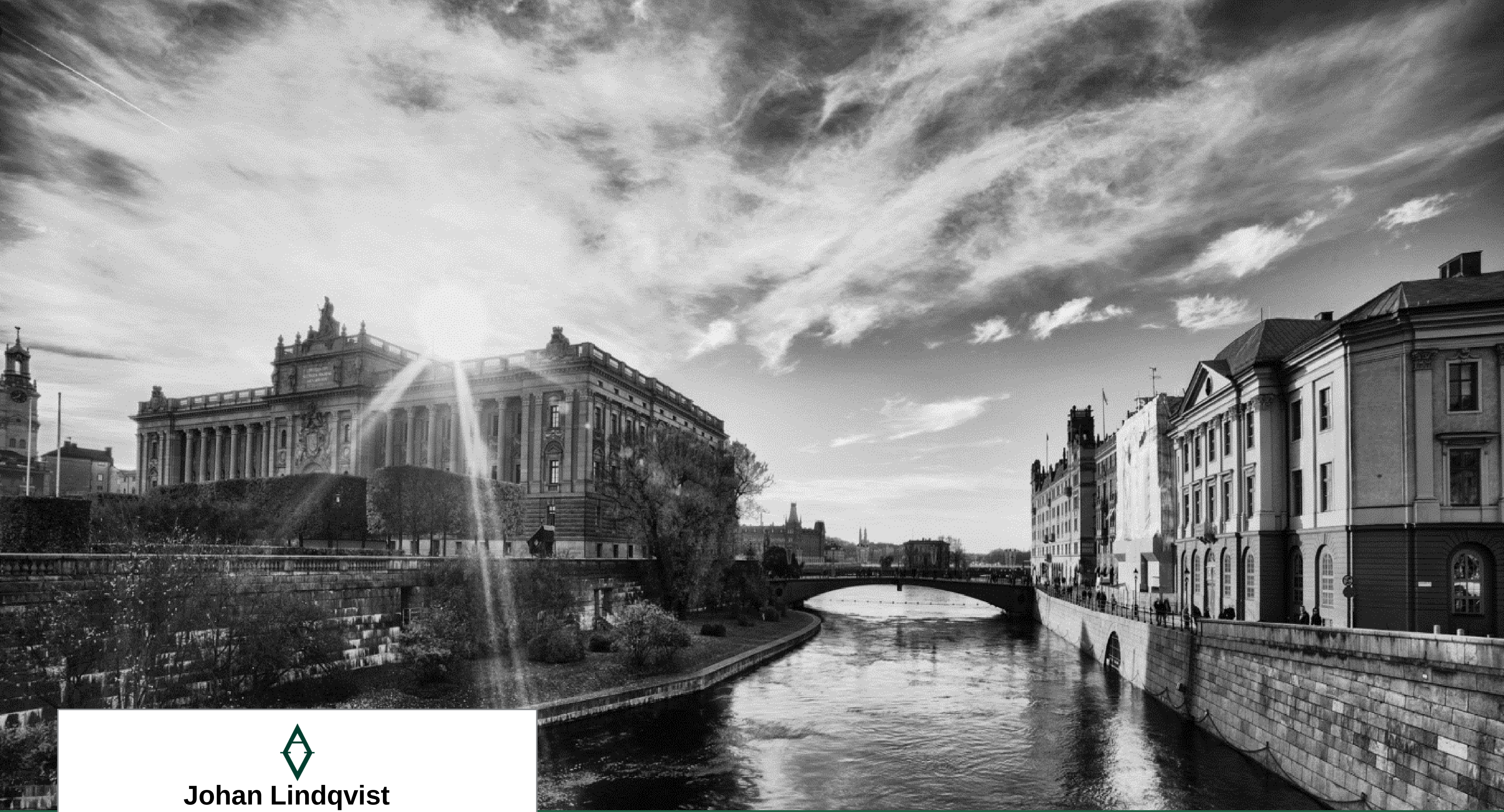
› External Distribution System Optimization for European Manufacturer of Liquid Paperboard and Sack Paper

› 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 **driving change** and **creating immediate impact** for our clients



Johan Lindqvist

Partner

Kungsgatan 2, 111 43, Stockholm, Sweden

+46 (0) 70 426 9252

johan.lindqvist@appliedvalue.com

APPLIED VALUE GROUP