Applied Value
Pulp & Paper Report

Quarterly Analysis Q4, 2021

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Applied Value Pulp & Paper Report

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

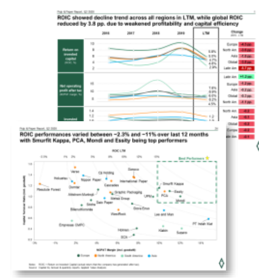
Average Industry EBITDA margin latest 4 quarters and LTM

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

ROIC

ROIC per region for the latest two 12-month periods

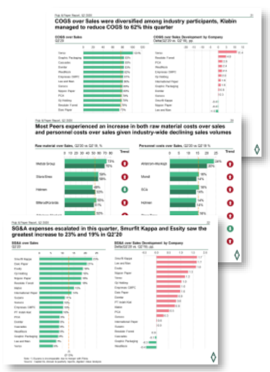
ROIC development per company and region for LTM



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 27 leading Pulp & Paper companies from Europe, North America, Latin America & Asia

Companies included in Financial Benchmarking in the Q4 2021 report

Market	Company	Revenue LTM (BEUR)	Country	Board	Paper	Tissue	Wood Products	Pulp	Other
Europe	Essity	11.9				✓			✓
Europe	Stora Enso	10.2		✓	✓		✓	✓	✓
Europe	Smurfit Kappa	10.1		✓					
Europe	UPM	9.8			✓		✓	✓	✓
Europe	Mondi	7.7		✓	✓				✓
Europe	Metsä Group	6.0		✓	✓	✓	✓	✓	✓
Europe	Södra	2.6							✓
Europe	BillerudKorsnäs	2.5		✓	✓			✓	✓
Europe	SCA	2.0		✓	✓	✓	✓	✓	✓
Europe	Holmen	1.9		✓	✓		✓		✓
North America	International Paper	17.0		✓	✓		✓	✓	✓
North America	WestRock	17.0		✓	✓				✓
North America	Packaging Corp. of America	6.8		✓	✓				✓
North America	Graphic Packaging	6.3		✓	✓				✓
North America	Sonoco	4.9		✓	✓				✓
North America	Resolute Forest	3.2			✓	✓	✓	✓	✓
North America	Cascades	2.7		✓	✓	✓			✓
North America	Verso	1.1			✓			✓	✓
LAT AM	Suzano	6.5			✓			✓	✓
LAT AM	Empresas CMPC	5.6		✓	✓		✓	✓	✓
LAT AM	Klabin	2.6		✓	✓		✓	✓	✓
Asia	Oji Holding	11.0		✓	✓		✓		✓
Asia	Nine Dragons	9.0		✓					
Asia	Nippon Paper	8.0		✓	✓		✓		✓
Asia	Daio Paper	4.6		✓	✓				✓
Asia	Lee and Man	3.7		✓		✓		✓	✓
Asia	Hokuetsu	1.9			✓			✓	✓

Source: Capital IQ, Quarterly Reports

Positive Y-o-Y revenue growth and profitability improvements recorded in Q4 2021 despite rocketing raw material prices

Financial Benchmarking: Highlights in Q4 2021

Key takeaways

Revenue Growth	› Yearly revenue experienced an average growth rate of 15% in FY21 compared with FY20 across the industry with the biggest growth of 28% coming from LATAM › Quarterly revenue also demonstrated positive run for all regions apart from North America, where slight decrease by less than 1 pp. was detected. Similar to yearly revenue, growth is mainly driven by growth in LATAM and Europe which reported growth rates of 5% and 3% respectively. Quarterly revenue in Asia increased by 2 pp. compared with Q3' 21 › Södra, Suzano,and Klabin were top industry performers in this quarter with reported Y-o-Y revenue growth of +58.8%, +43.1%, +39.2%. Only Nippon Paper experienced a yearly revenue decrease
Profitability & Costs	› EBITDA margin for most product segments demonstrated a downward trend on a Q-o-Q basis. Tissue recorded the biggest drop of 5 pp. to a negative quarterly EBITDA margin of -2% due to sharply increased energy costs. Only Board kept a steady profitability with EBITDA margin remaining the same as that of Q3' 21 › Y-o-Y EBITDA margin growth varied among benchmarked companies. SCA, Verso and Södra are top industry players with Y-o-Y profitability marked growth of 29 pp., 20 pp., and 15 pp. respectively › Personnel cost were successfully controlled by most European players while cost of raw materials over sales went up due to higher commodity prices. Despite this, SCA reduced raw material cost by 5 pp. to 24%, taking a leading position in the industry › Although increasing COGS over sales were reported by most benchmarked companies, Verso however achieved cost reduction by 23 pp. to 74% by mill suspension/closure and cost reduction initiatives across the mill system
Return On Invested Capital (ROIC)	› Driven by increasing profitability, the global ROIC average grew by 3.3 pp. to 8.2% in 2021 › Companies in Europe and North America displayed rise of 3.4 pp. and 3.6 pp. respectively in regional ROIC on average in Q4' 21; Latin America displayed the biggest jump of 5.1 pp. in ROIC to 9.4% in 2021 › Resolute Forest was the top industry performer in FY21 with ROIC >25% achieved

Top performers

Revenue Growth: SÖDRA, suzano, Klabin

Profitability & Costs: SCA, VERSO, SÖDRA

ROIC: resolute Forest Products

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

Hikes in costs and challenges on supply characterized Q4'21 while early 2022 sees no sign of improvement with sharpened geopolitical conflicts

Market Trends: Highlights in Q4 2021

Key takeaways

Industry News	› Given recent situation in Russia and Ukraine, announcements to discontinue operation and trade have been made by firms with business in Russia and Ukraine including Stora Enso, Mondi, UPM, Metsä Group, etc. › The paper market continued rough ride in Q4' 21 as supply and demand were still out of balance. Despite price raises across the industry and robust demand, mill closures or shutdowns for maintenance, lack of labor and freight carriers and restrained imports because of logistical challenges have contributed to the upheaval in cost and restrained profitability. There is not yet a clear end in sight › Electricity and natural gas price in Europe skyrocketed in Q4 2021 due to shortage of energy supply. Electricity prices displayed rise of 371% and 362% in North Europe and Germany respectively in LTM. EU gas price went even further with an increase rate of 549% reported in December 2021 compared with the same period in last year. Uncertainties brought by geopolitical issues in this region is expected to further worsen the situation
Pulp Prices	› Pulp prices of most regions apart from Asia experienced moderated decline in Q4' 21 compared with the last quarter. However, on an annual basis, prices in Northern Europe, US East, and Asia saw growth rates of approx. 40%, ~30% and 10% respectively › Global paper industry continued to be impacted by shrinking paper availability, rising prices, tightening inventories and inconsistent delivery of paper
Graphic Paper & Packaging	› Prices of packaging paper and graphic paper stabilized at the historic highest level since 2020 with flattened upward curve observed by the end of 2021. Driven mainly by high demand, low paper availability, logistical constraints and ever-increasing production costs, the upward trend of prices is expected to continue and even escalated in early 2022
Commodities & Currencies	› Oil prices hit the top and fell back with a drop of 12 pp. during the quarter and ended at ~72 USD/barrel. Natural gas prices continued soaring by 594% to 38.03 USD/mmbtu in Europe during LTM. Moderate decline trend of gas price is identified in US in Q4'21. Given the geopolitical turbulence in Europe, market sentiment is clouded for future energy supply › Most currencies depreciated against USD in this quarter. Compared to the prior year, SEK, EUR and GBP were down by 8.6 pp., 7.8 pp., and 1.2 pp. respectively. CNY and BRL appreciated against the USD by 2.6 pp. and 1.7 pp. respectively in LTM

Source: RISI, Interim & Annual Reports.

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Top performers

SÖDRA

suzano

Klabin

SCA

VERSO

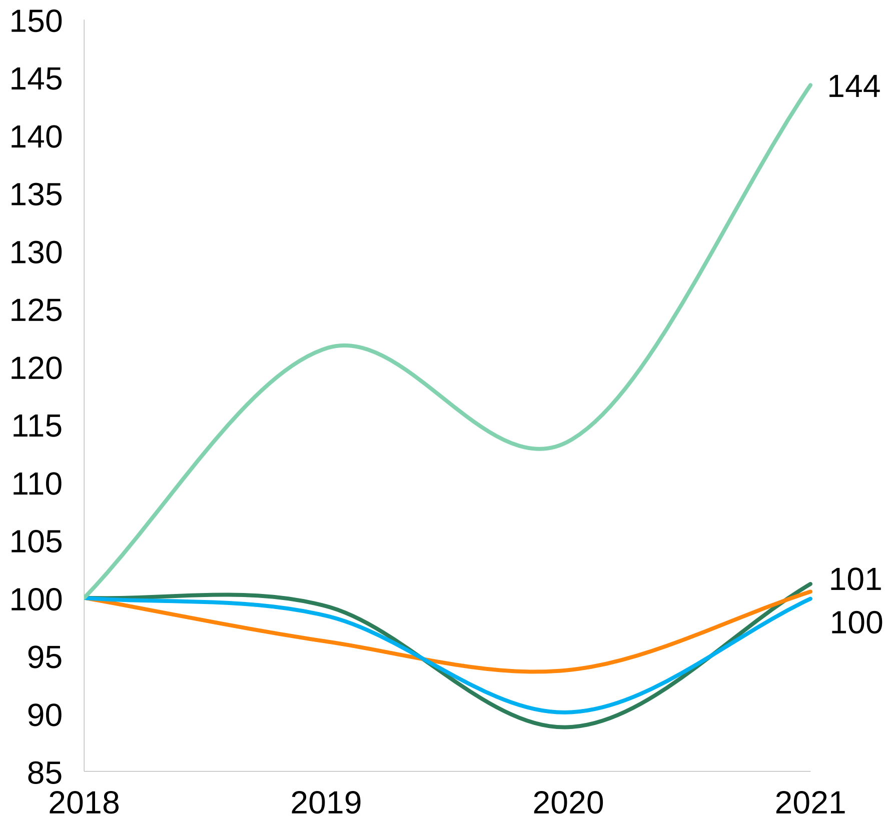
SÖDRA

resolute Forest Products

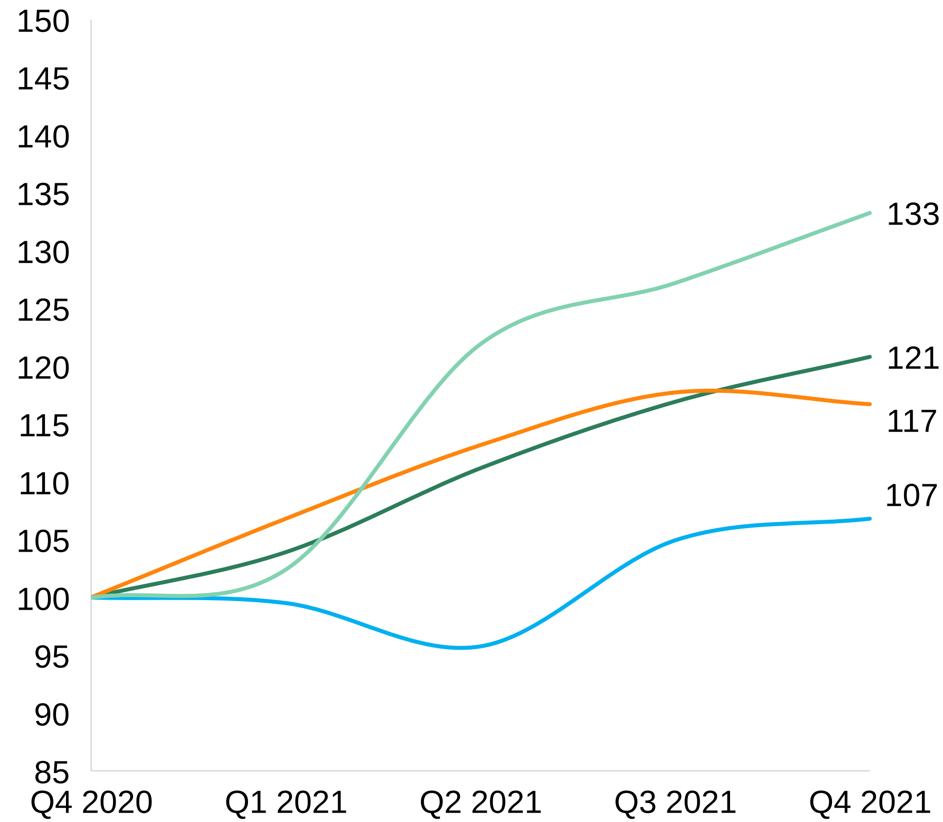
Source: RISI, S&P Capital IQ, Interim & Annual Reports.

All regions experienced rises in yearly revenue, only North America saw downturn in revenue in Q4 on a Q-to-Q basis

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



Indexed Quarterly Revenues, Q4'20-Q4'21 (index Q3'20=100)

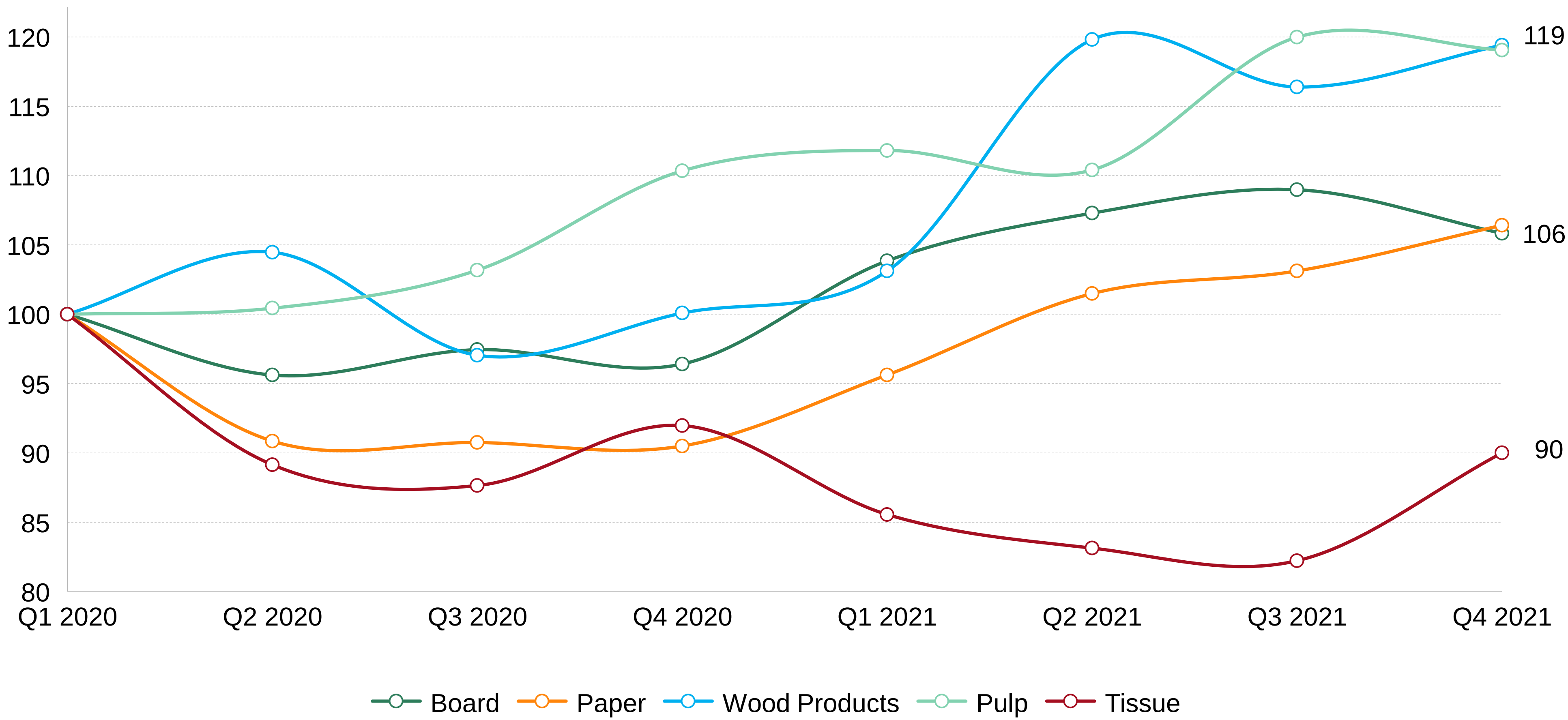


Europe North America Asia Latin America

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

Of all segments, pulp and board experienced a moderate decline while tissue achieved solid growth in Q4 2021 revenue

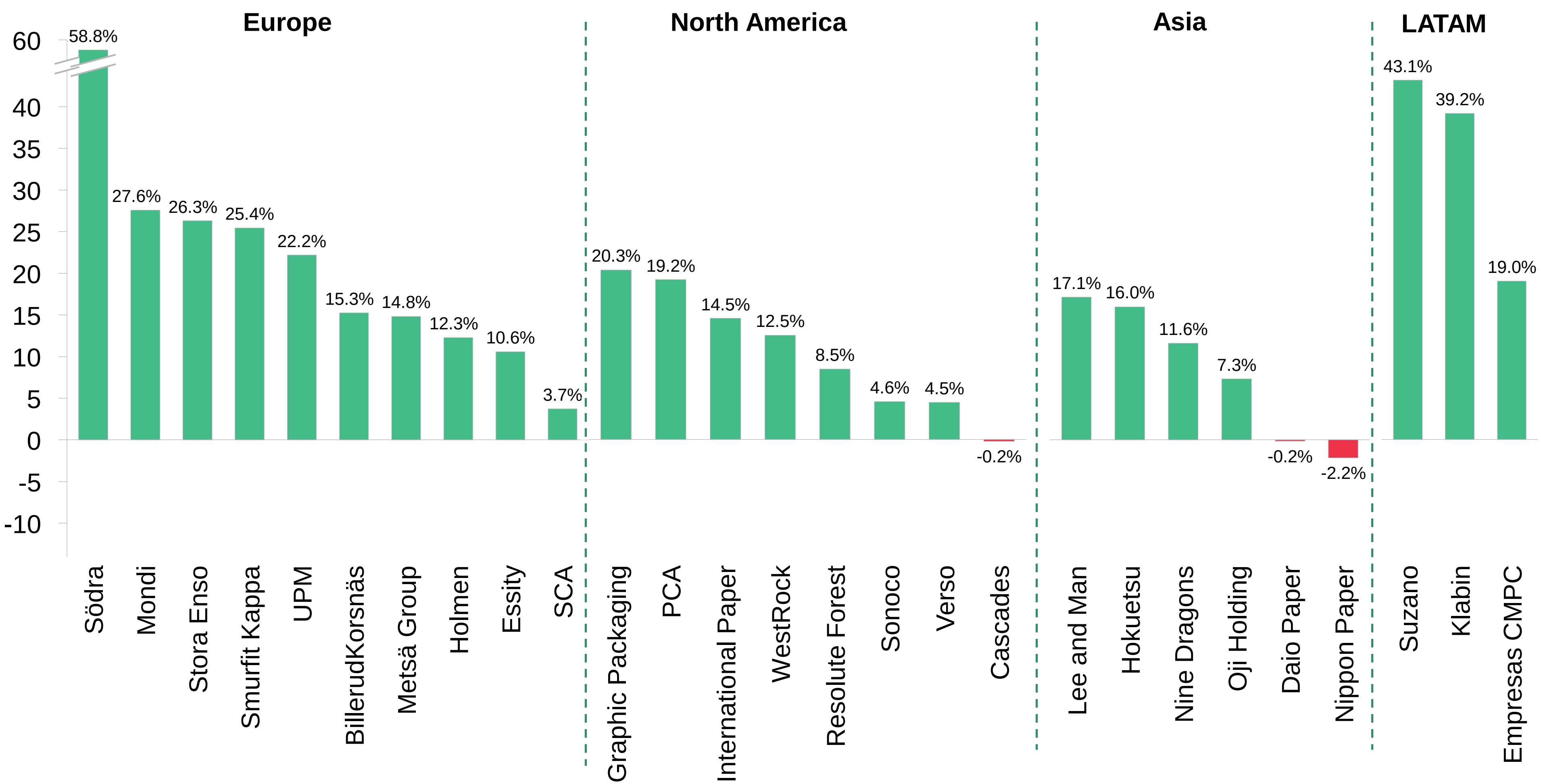
Indexed Quarterly Revenues by Segment, Q1’20 – Q4’21 (Q1’20 =100)



Note: The included companies differ from previous quarter
Source: S&P Capital IQ, Applied Value Analysis.

Most industry players marked growth in yearly revenue with the best and worst performers being Södra, up by 59% and Nippon Paper, down by 2.2%

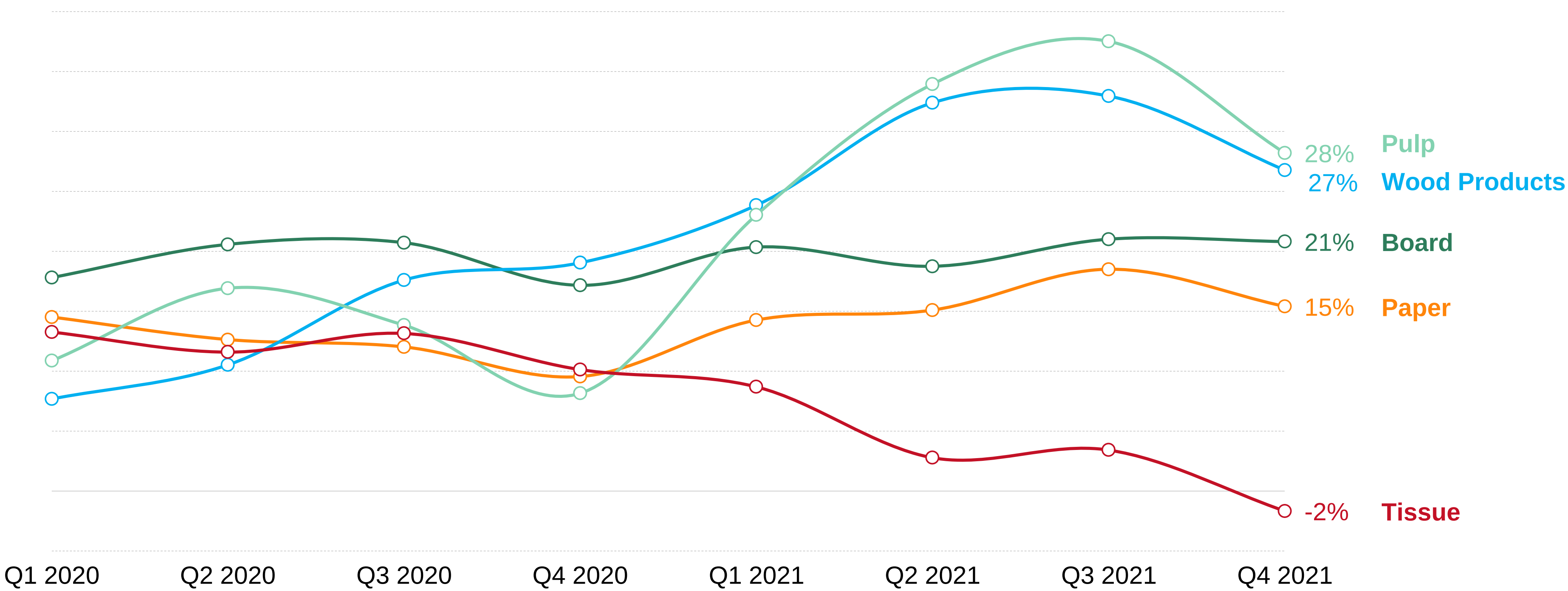
Revenue Growth, Q4'21 vs. Q4'20, %



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

Quarterly EBITDA margin of all product segments fell in Q4' 21 amid soaring energy cost with tissue down most by 5 pp. to -2%

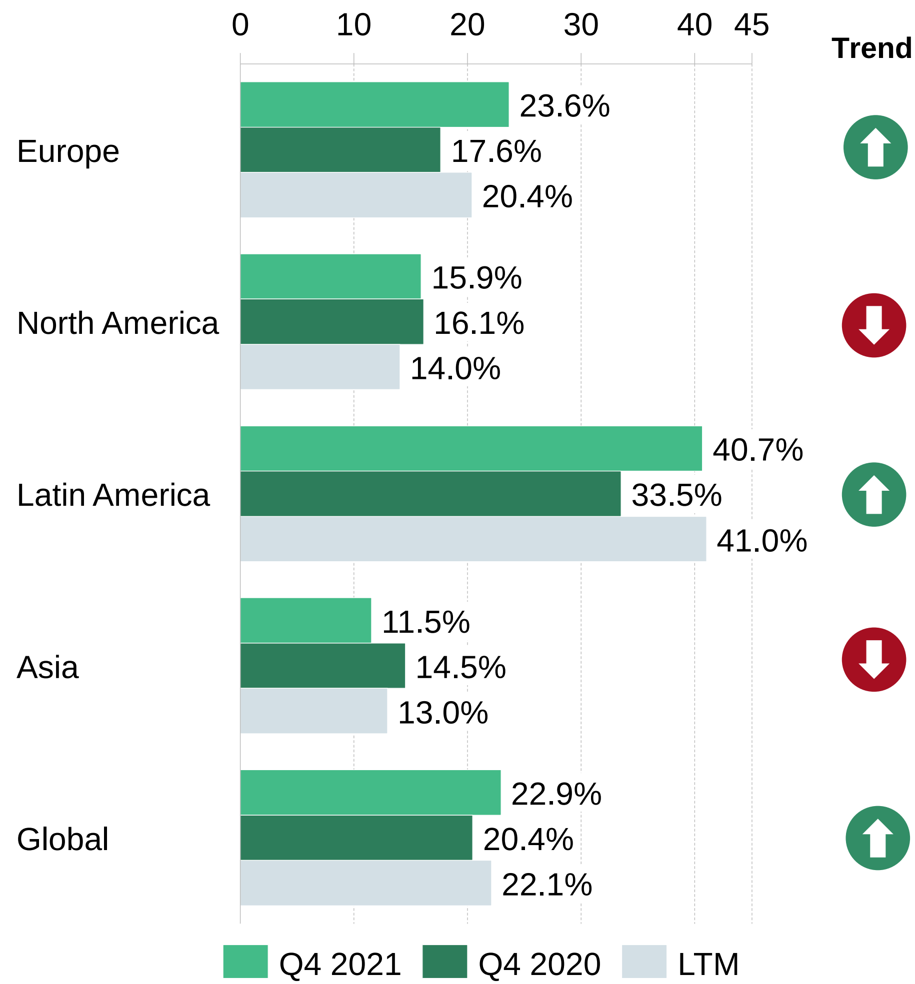
Quarterly EBITDA Margin by segment, Q1'20 – Q4'21, %



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

EBITDA margins of Europe, Latin America and Global average increased slightly Y-o-Y, yet Asia marked a drop of 21% compare with Q4' 20

EBITDA margin by region, Y-o-Y

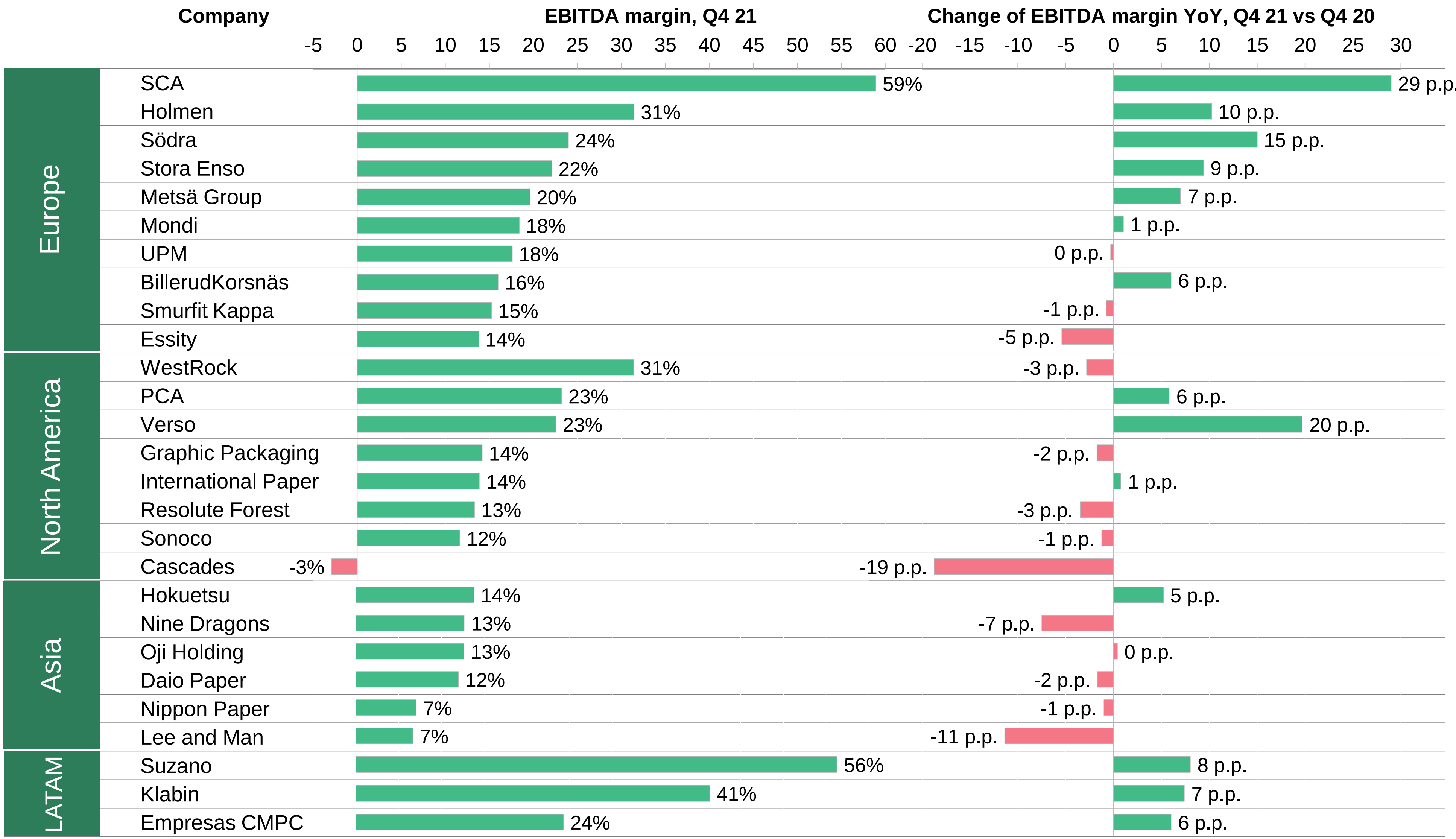


Source: S&P Capital IQ, RISI, Interim & Annual Reports, Applied Value Analysis.

Industry News

- **International Paper** announced completion of **Sylvamo Corporation spin-off** in Oct' 21, and planned to start building a corrugated packaging plant in **Pennsylvania** since Q1' 22
- **BillerudKorsnäs** sold Beetham mill at about **30 MSEK** in Nov' 21, and announced to acquire all outstanding shares of **Verso** at about **825 MUSD** in Q2' 22
- The Paperworkers' Union issued strike since Jan' 22 for several **UPM** businesses in **Finland**
- **CMPC** planned to acquire pulp, paper and sack businesses of **Iguaçu Celulose, Papel S.A** for **170 MUSD** in Q1' 22
- In Dec' 21, **Resolute Forest** announced to idle **Calhoun mill** because of "significant financial losses"; **Oji Holdings** planned to invest about **44.2 MUSD** to build a new corrugated container plant in **Vietnam** in 2022
- **SCA** increased prices on **white and brown kraftliner in Europe** by **50 EUR/ tonne** from Dec' 21; Sonoco announced price raise by **10%** on **all tube and core grades sold in EMEA regions**

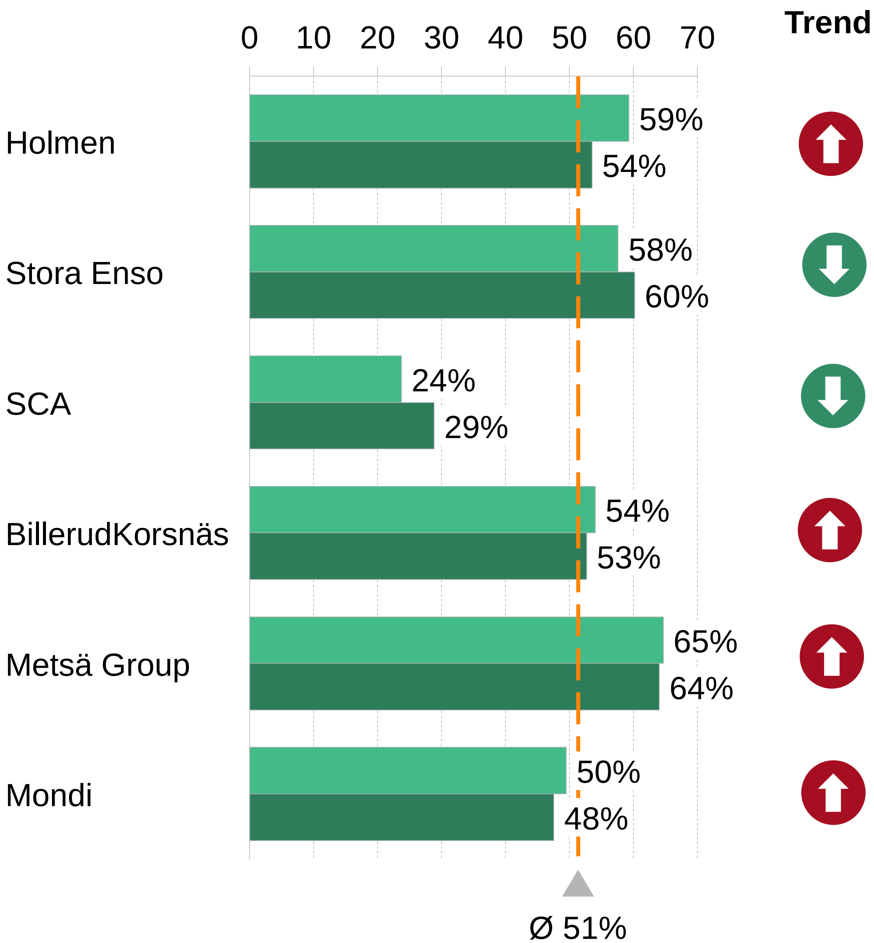
Y-o-Y EBITDA margin growth varied with Europe and LATAM as winners - SCA, Verso and Södra showed strongest growth in profitability



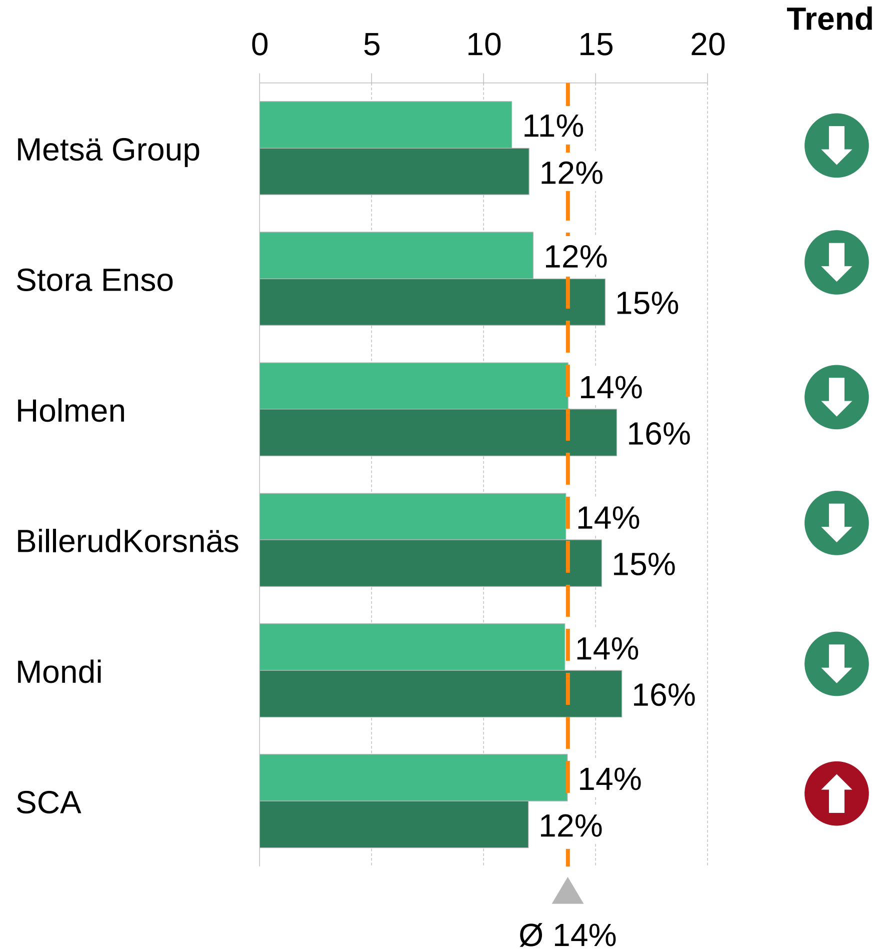
Source: Interim & Annual Reports, S&P Capital IQ, Applied Value analysis.

Raw material costs over sales displayed upward trend while personnel costs were successfully controlled by most performers

Raw material over Sales
Q4'21 vs Q4'20, %



Personnel costs over Sales
Q4'21 vs Q4'20 %

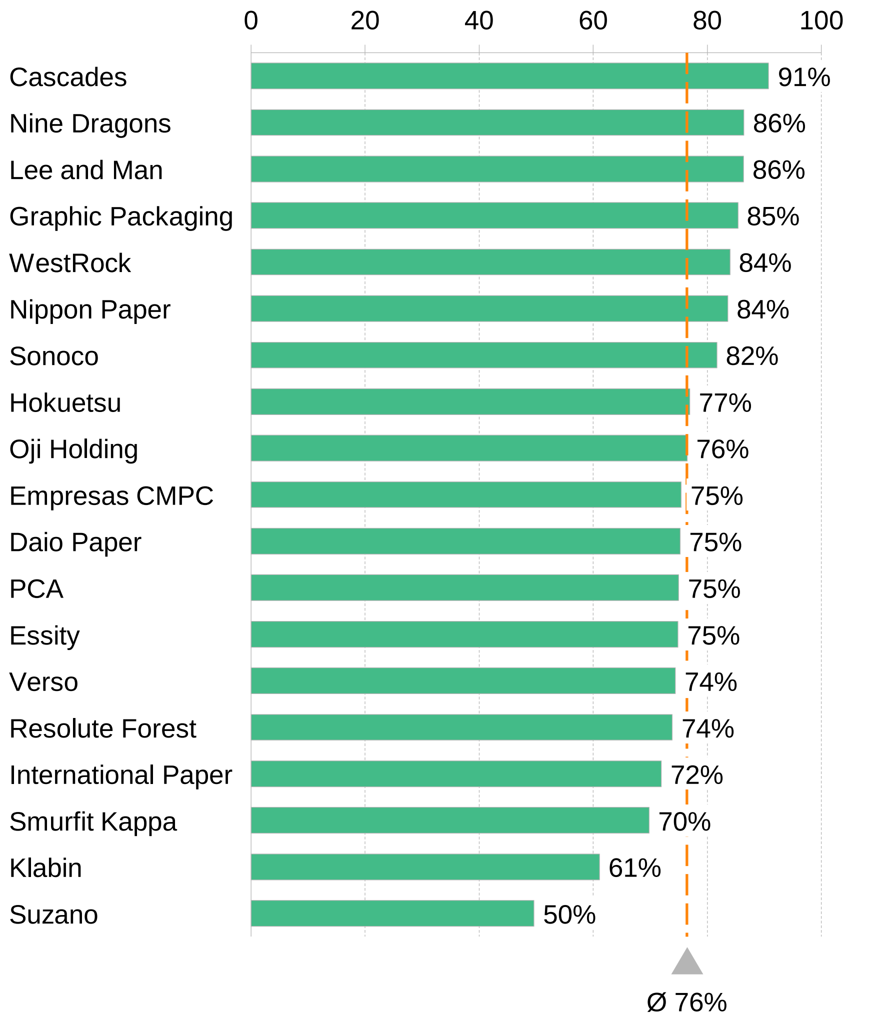


Q4 2021 Q4 2020

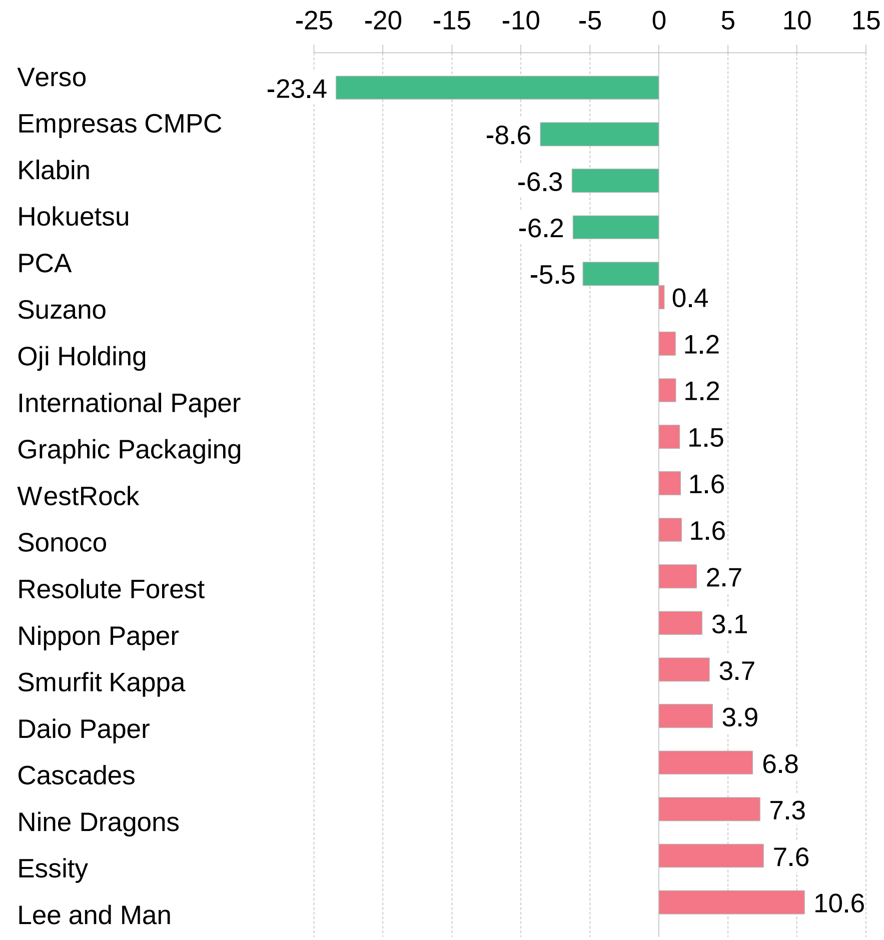
Source: S&P Capital IQ, Interim & Annual Reports, Applied Value Analysis.

COGS over Sales for most players increased, but Verso reduced COGS by 23.4 pp. to 74% via idled/closed mill and cost reduction initiatives

COGS over Sales
Q4'21



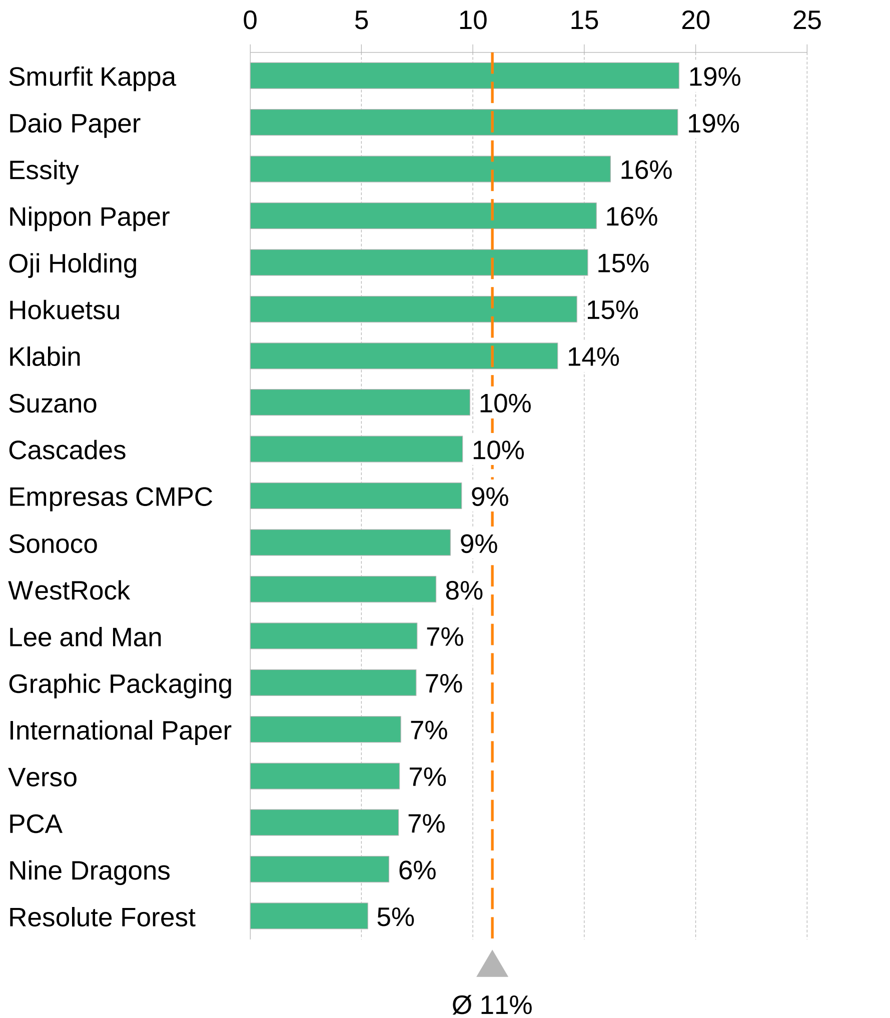
COGS over Sales Development by Company
Delta (Q4'21 vs. Q4'20), pp.



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

SG&A over Sales dropped for most players, Smurfit Kappa achieved biggest reduction of 3.8 pp. to 19%, the top among all benchmarked companies

SG&A over Sales
Q4'21



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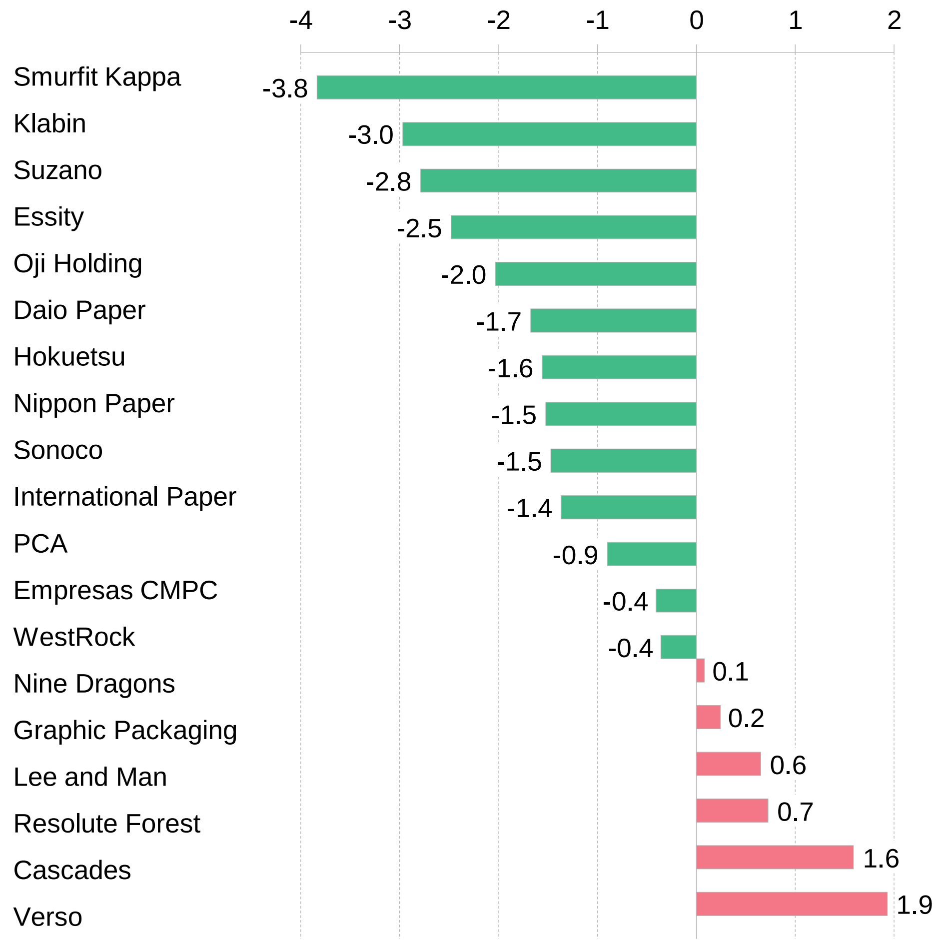
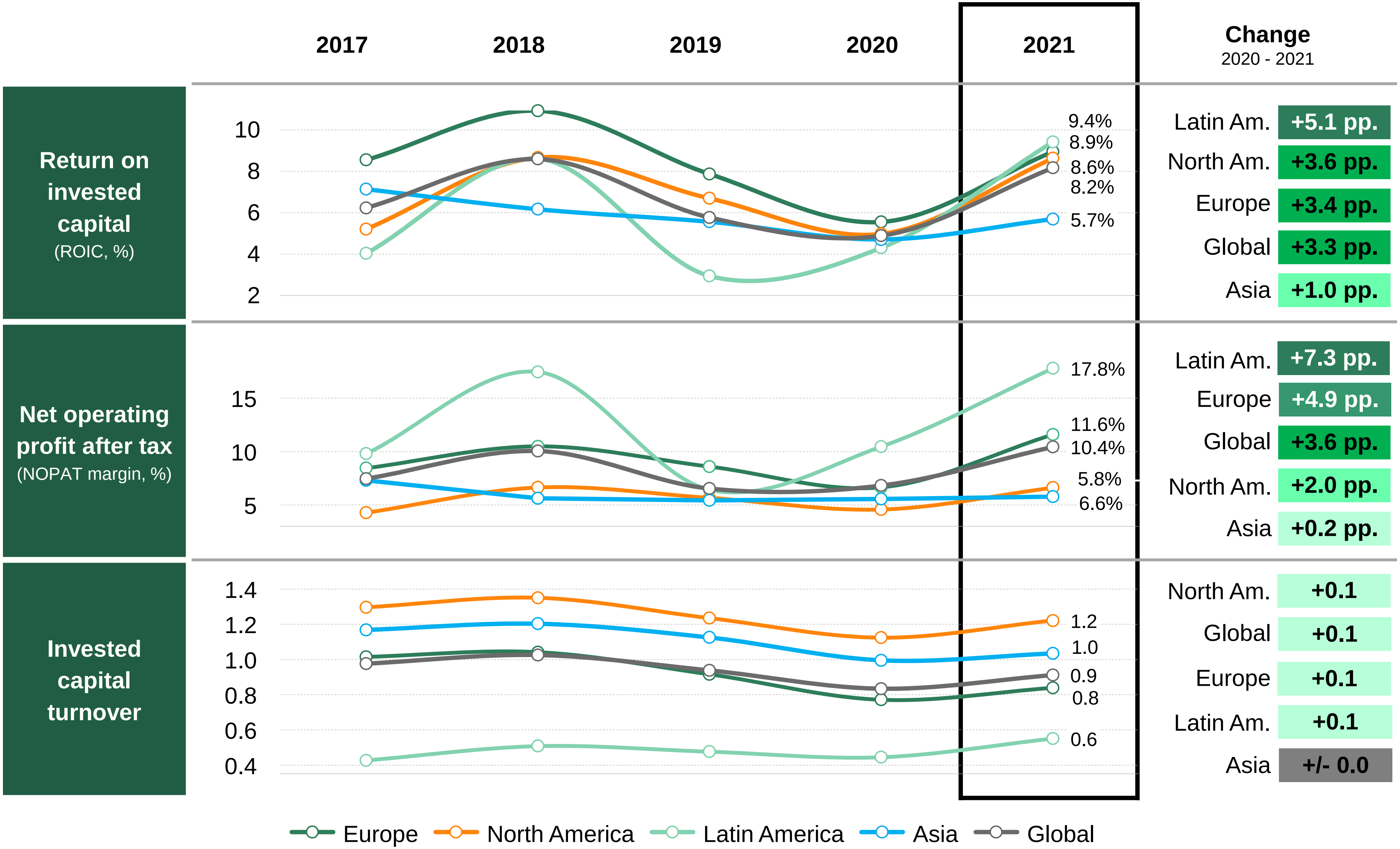


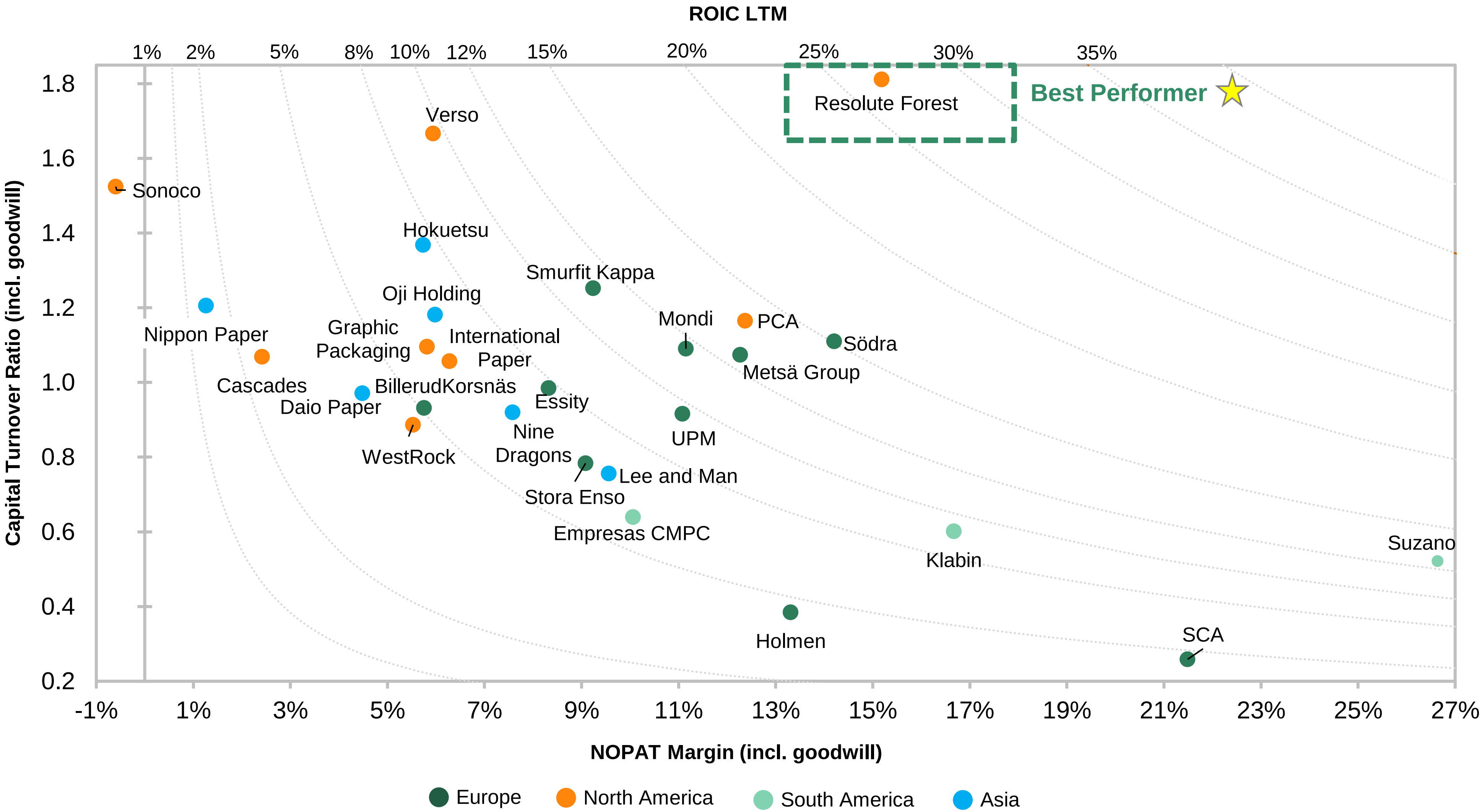
Source: S&P Capital IQ, Interim & Annual Reports, Applied Value Analysis.

ROIC and NOPAT of all regions demonstrated Y-o-Y increase in 2021 with Latin America presenting the strongest uptick momentum



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

ROIC performances varied between -0.9% and 30% in Q4' 21 with Resolute Forest being the best performer



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

Hikes in costs and challenges on supply characterized Q4'21 while early 2022 sees no sign of improvement with sharpened geopolitical conflicts

Market Trends: Highlights in Q4 2021

Key takeaways

Industry News

- Given recent situation in Russia and Ukraine, announcements to discontinue operation and trade have been made by firms with business in Russia and Ukraine including Stora Enso, Mondi, UPM, Metsä Group, etc.
- The paper market continued rough ride in Q4' 21 as supply and demand were still out of balance. Despite price raises across the industry and robust demand, mill closures or shutdowns for maintenance, lack of labor and freight carriers and restrained imports because of logistical challenges have contributed to the upheaval in cost and restrained profitability. There is not yet a clear end in sight
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Pulp Prices

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- Global paper industry continued to be impacted by shrinking paper availability, rising prices, tightening inventories and inconsistent delivery of paper

Graphic Paper & Packaging

- Prices of packaging paper and graphic paper stabilized at the historic highest level since 2020 with flattened upward curve observed by the end of 2021. Driven mainly by high demand, low paper availability, logistical constraints and ever-increasing production costs, the upward trend of prices is expected to continue and even escalated in early 2022

Commodities & Currencies

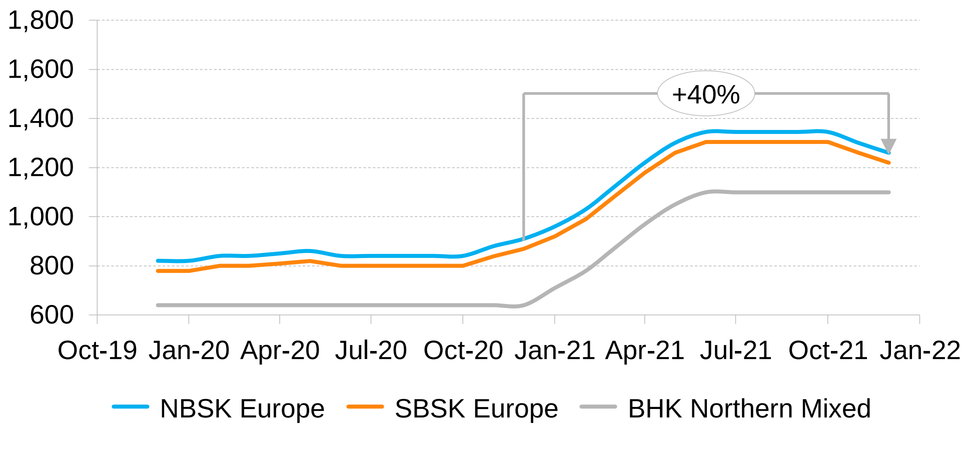
- Oil prices hit the top and fell back with a drop of 12 pp. during the quarter and ended at ~72 USD/barrel. Natural gas prices continued soaring by 594% to 38.03 USD/mmbtu in Europe during LTM. Moderate decline trend of gas price is identified in US in Q4'21. Given the geopolitical turbulence in Europe, market sentiment is clouded for future energy supply
- Most currencies depreciated against USD in this quarter. Compared to the prior year, SEK, EUR and GBP were down by 8.6 pp., 7.8 pp., and 1.2 pp. respectively. CNY and BRL appreciated against the USD by 2.6 pp. and 1.7 pp. respectively in LTM

Source: RISI, Interim & Annual Reports.

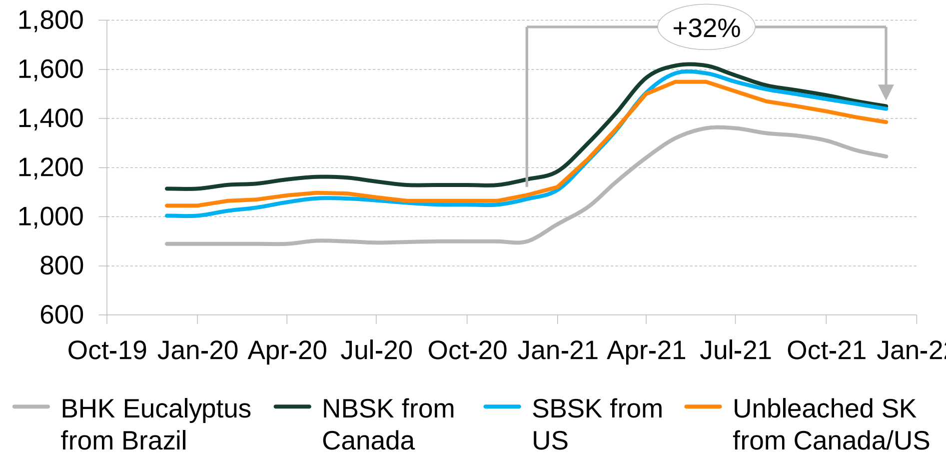
Pulp prices topped out and turned down in Q4'21 in most regions with Y-o-Y growth rate ranging from 10% to 40%

Global Pulp Price Development, Last 24 Months

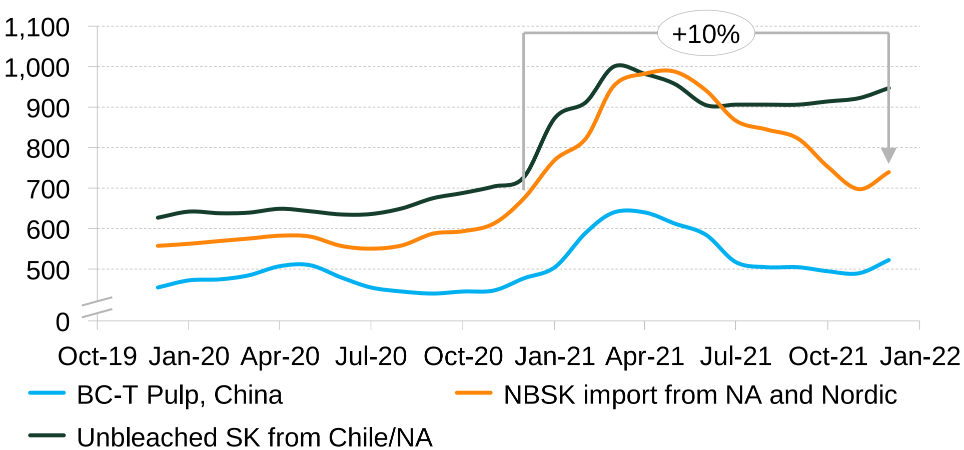
Northern Europe, USD/Tonne



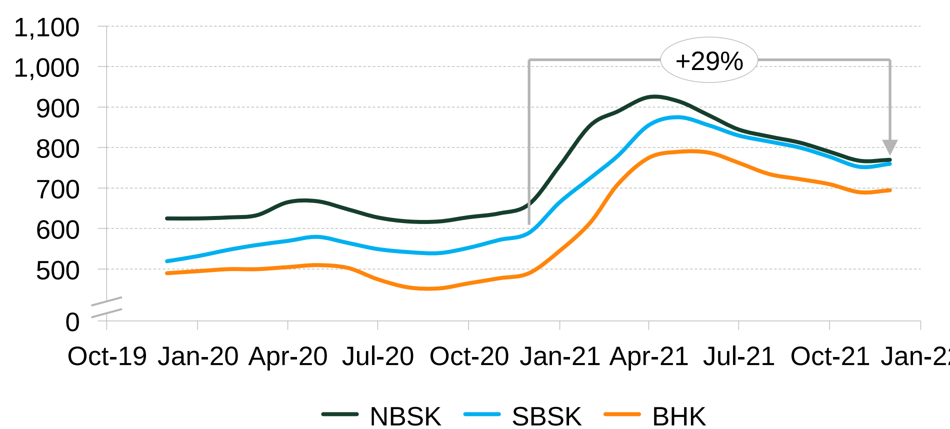
US East, USD/Tonne



Asia, USD/Tonne



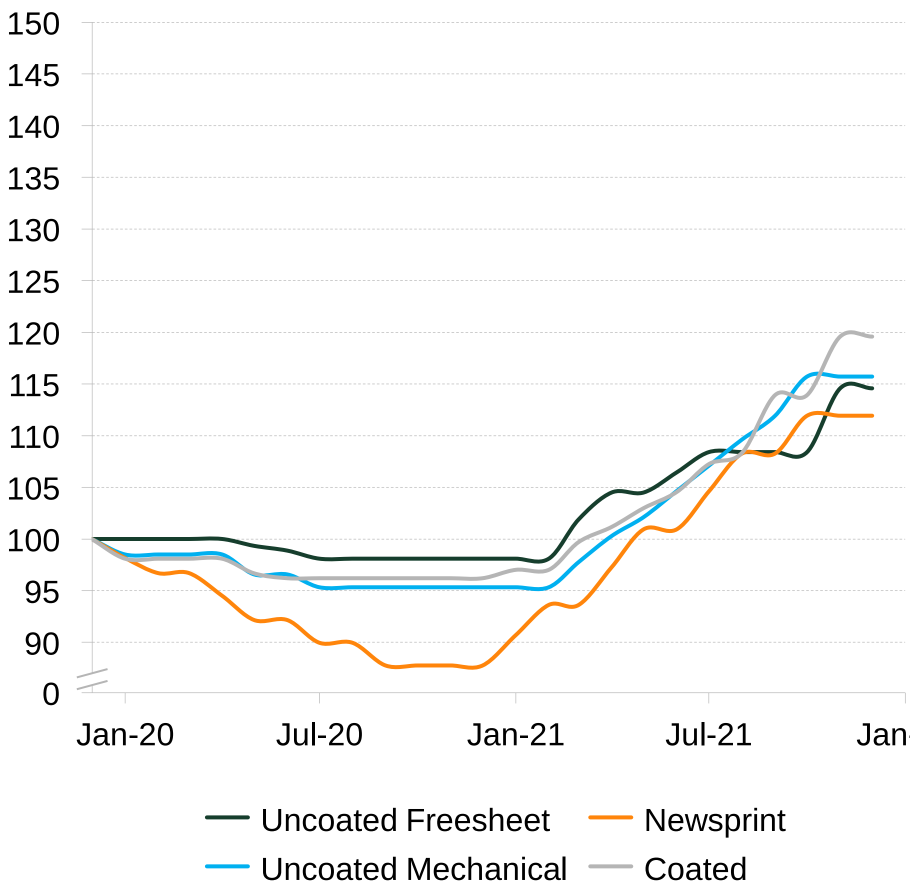
US East spot prices, USD/Tonne



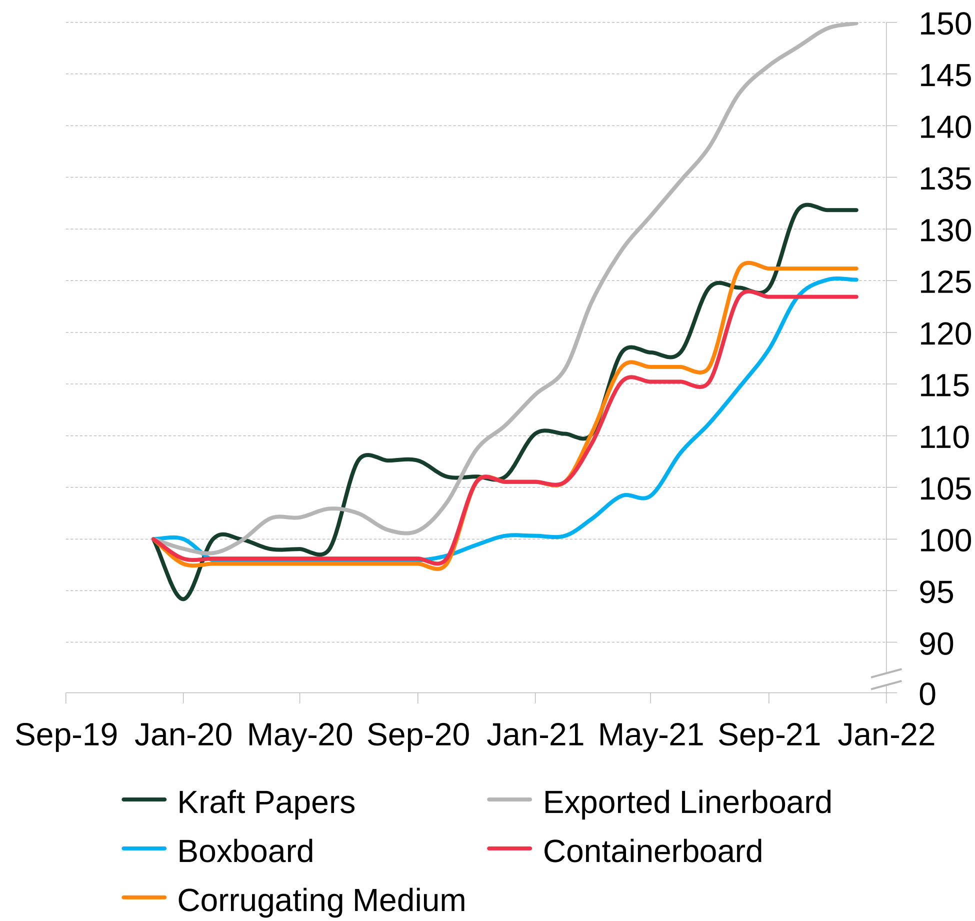
Note: Midpoint price levels.
Source: RISI PPI Pulp & Paper Week.

Graphic paper and packaging paper price resumed climbing and stabilized at historic highs in Q4’ 21 due to continued supply-demand imbalance

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



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

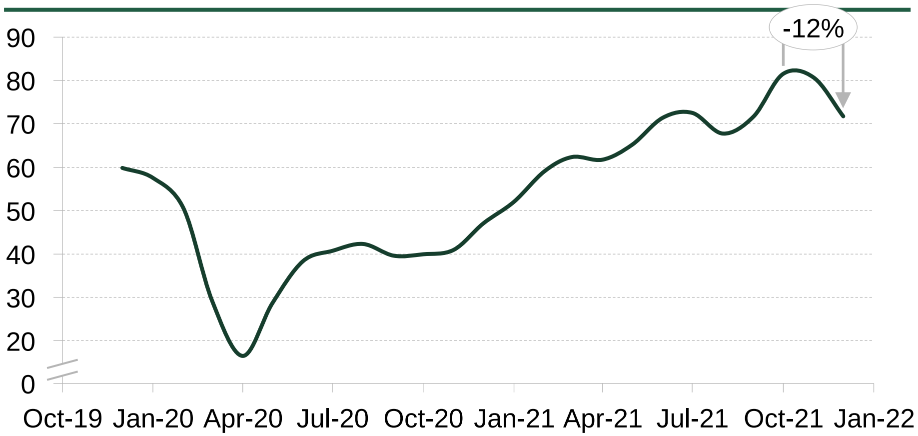


Note: Midpoint price levels.
Source: RISI PPI Pulp & Paper Week.

Electricity and natural gas in Europe skyrocketed by >300% and >500% compared to Q4’ 20 due to supply shortage

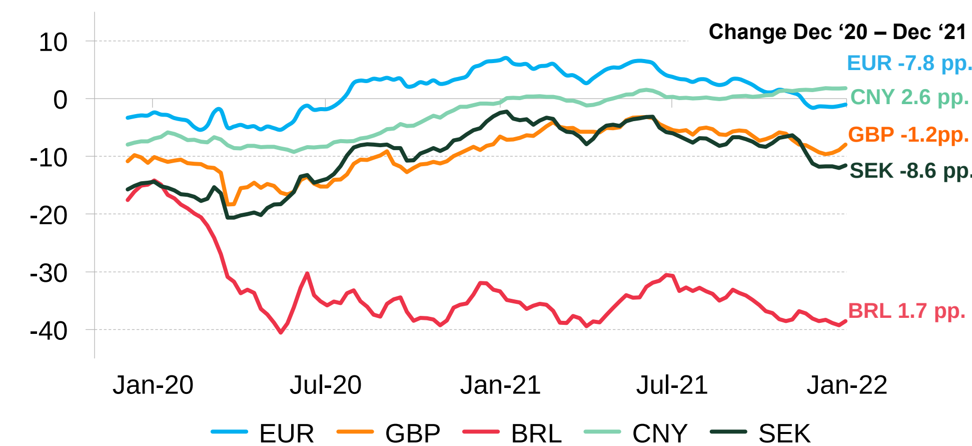
Commodity & Currency Price Development, Last 24 months

WTI Spot Crude Oil, USD/Barrel



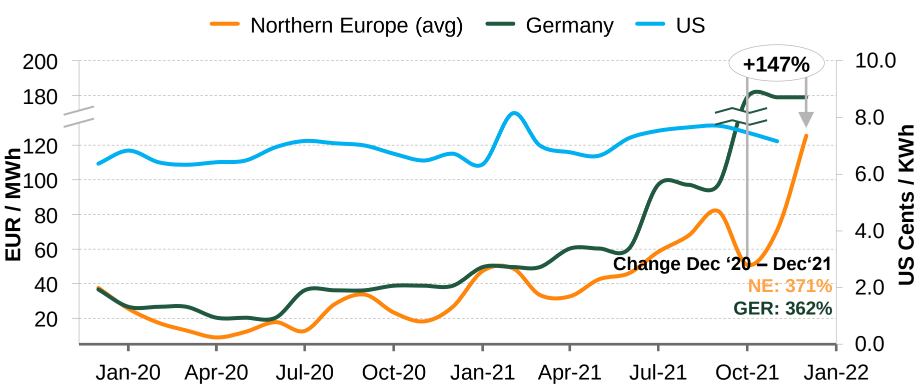
Source: US Energy Information Administration.

Currency appreciation against USD, %



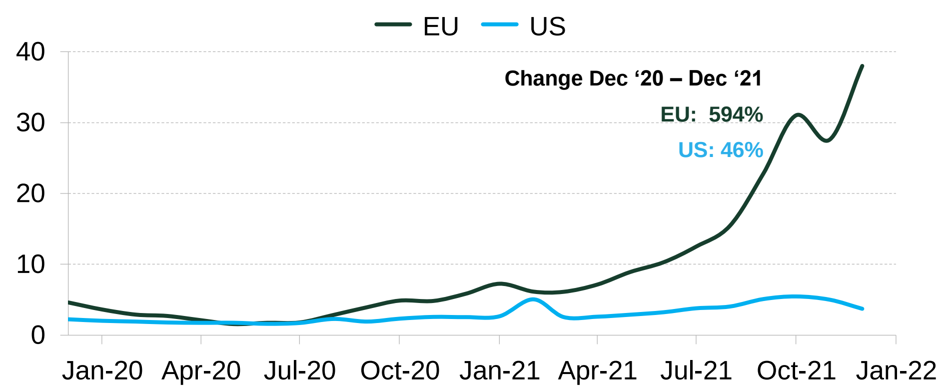
Source: S&P Capital IQ.

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 consultancy and change agent within the Swedish ***Stenbeck Group…***

KINNEVIK

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

2022

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 What's Your Code?

ROI driven

Fact-based

Practical over theoretical

Hands-On

Global perspectives

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

Selected clients

Applied Value Offices and Footprint

New York	San Francisco	Stockholm	Helsinki	Shanghai
Empire State Building 350 Fifth Ave New York, 10118 USA	Pier 35, 1454 The Embarcadero San Francisco, CA 94133 USA	Kungsgatan 2 PO Box 5047 111 43 Stockholm Sweden	Old Church Park Lönnrotinkatu 5 00120, Helsinki Finland	Tower A, NA Plaza No. 518 Kunming Road, Shanghai, 200041 P.R. China
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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

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APPLIED VALUE GROUP