

AFRY

ÅF PÖYRY



Global disruption: the impact of Covid-19 on the bioindustry sector

Part 2: Wood Products (wood-based panels, surfacing materials and sawnwood/ lumber)

MAY 2020

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

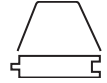



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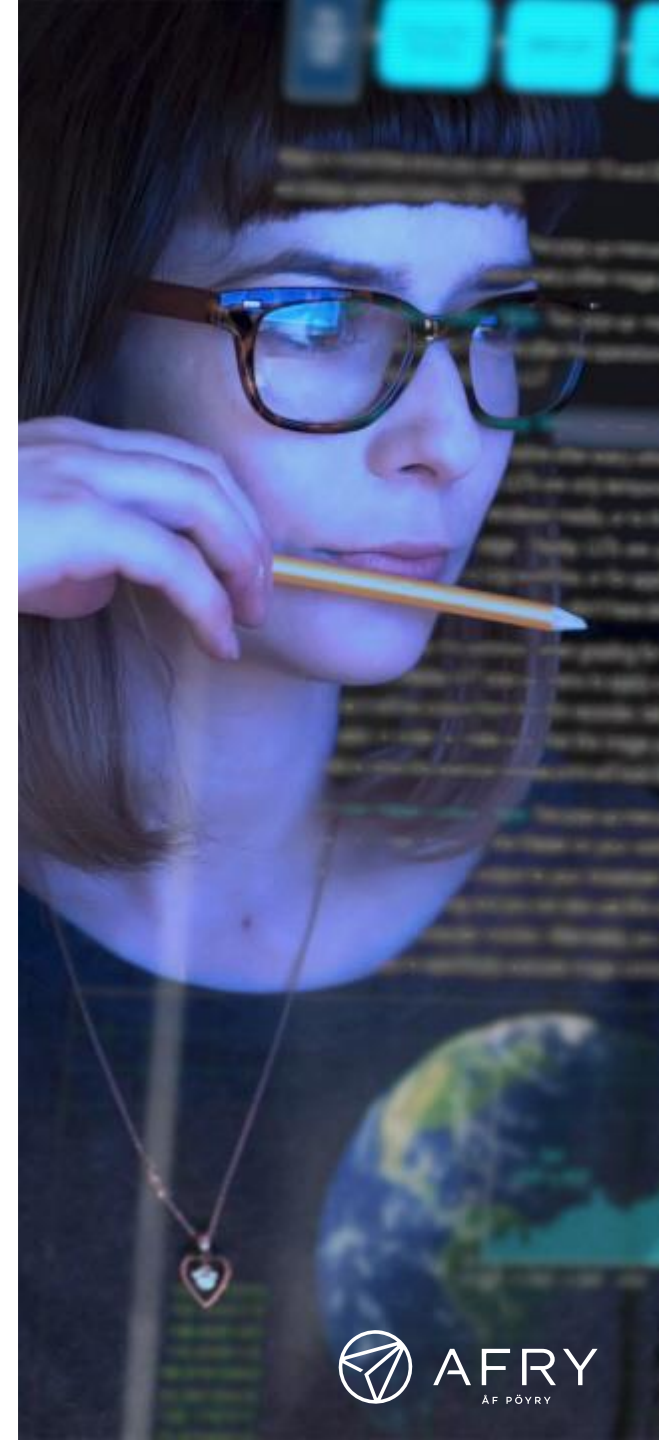
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OVERVIEW

Covid-19 provides challenges for the wood products sector, but it is well positioned to come out stronger

- We are now approximately two month into the period where Covid-19 has significantly impacted everyday life in Europe and North America and China. At AFRY we wanted to review what the impact has been on the **wood-based panel** and **surfacing material** sector as well as **sawnwood** – what are the effects we have already seen - and, perhaps more importantly, what we can learn in terms of understanding the short and longer term outlook for the sector.
- To undertake this work we took inputs from a number of our experts across different products, and from multiple countries, to ensure a robust and broad analysis.
- The work is summarised herein. We are keen to discuss this in more depth with you. To arrange a telephone discussion or conference/video call, please see our contact details on page 22.
- There is no doubt that this is a challenging time, raising a number of questions. Whilst there are winners and losers, the global wood products sector is resilient. The demand for wood-based panels and surfacing materials is well documented, and there is a strong ongoing need for both product groups. Decorative wood-based panels have suffered more than structural wood-based panels/ products. Furthermore, prices having recently plateaued and are expected to drop short-to mid-term, although the timing of this is open to debate.
- In the longer term there are questions about how quickly global economies will bounce back, but for now we can expect some turbulence in wood-based panels, surfacing materials and sawnwood, and indeed the wider world, rebalances.

Frank Goecke
Director

Saara Söderberg
Vice President



AFRY's demand modelling methodology links macroeconomic developments with specific industry trends

GDP

- GDP forecasts shown are median based and utilise recent forecasts from an array of financial institutes. The analysis uses 19 contributors from the Eurozone, 35 from the US and 19 from China
- Consensus Economics is used to illustrate longer term outlook

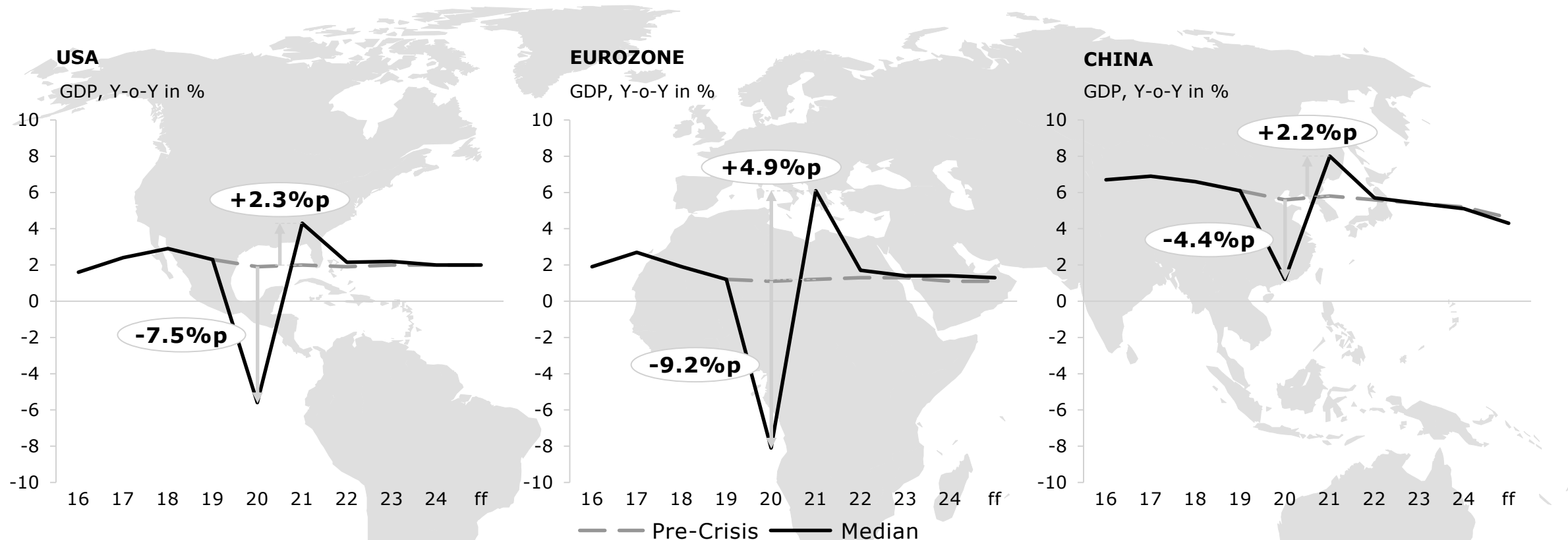
CONSTRUCTION AND FURNITURE

- The forecasts shown in this document are based on AFRY methodology, combining historical volatilities of each country's construction and furniture production sectors with current substitution trends for each product as well as underlying country risk to project product demand
- In the Central scenario, shown in this document, a V-shaped development is assumed, implying an accelerated rebound beginning in 2021 before gradually reverting towards long-term sustainable growth rates in 2022 and beyond

ALTERNATIVE SCENARIOS

- Moving into the mid-term, AFRY deems the up- and downsides to the Central scenario to gradually skew to the negative; as a prolonged crisis and lengthy rebound is deemed to be more likely than an even faster recovery than is projected the Central scenario
- Alternative scenarios are not included in this material

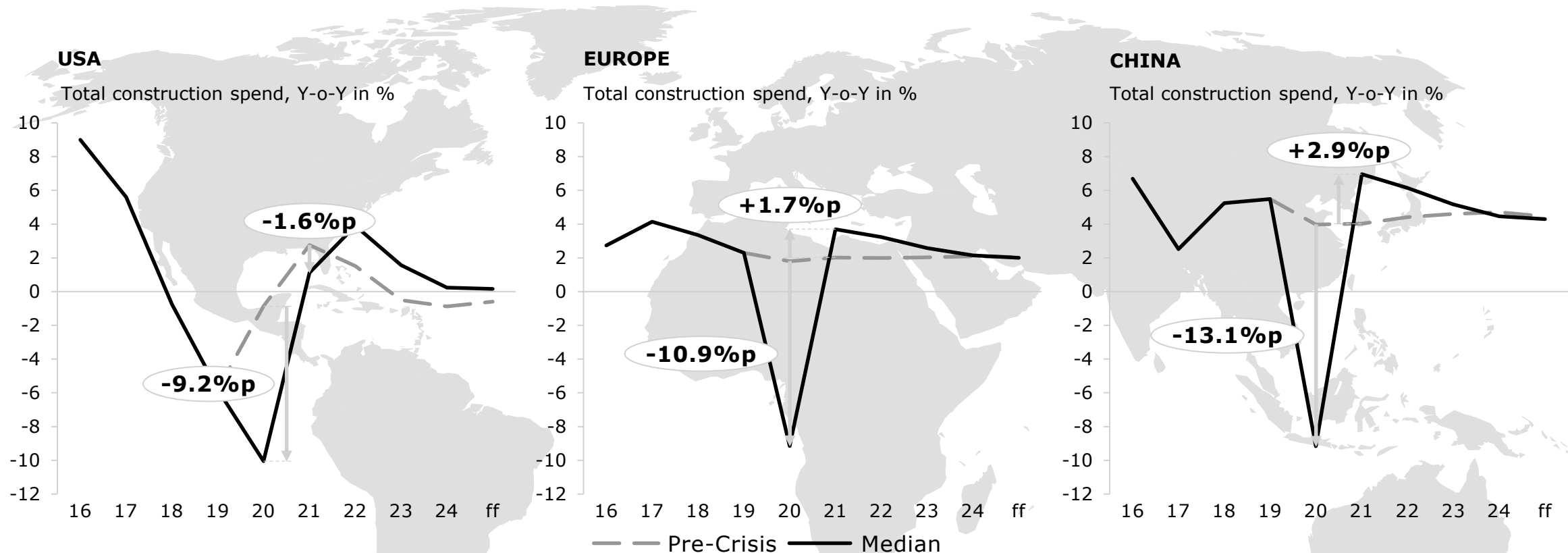
To understand the longer term outlook we have utilised multiple forecasts; all regions are projected to take a hard hit followed by a rebound



- GDP forecasts shown are median based and utilise recent forecasts from an array of financial institutes. The analysis uses 19 contributors from the Eurozone, 35 from the US and 19 from China. Consensus Economics is used to illustrate longer term outlook

SOURCE: AFRY, using array of Financial Institutes' GDP projections

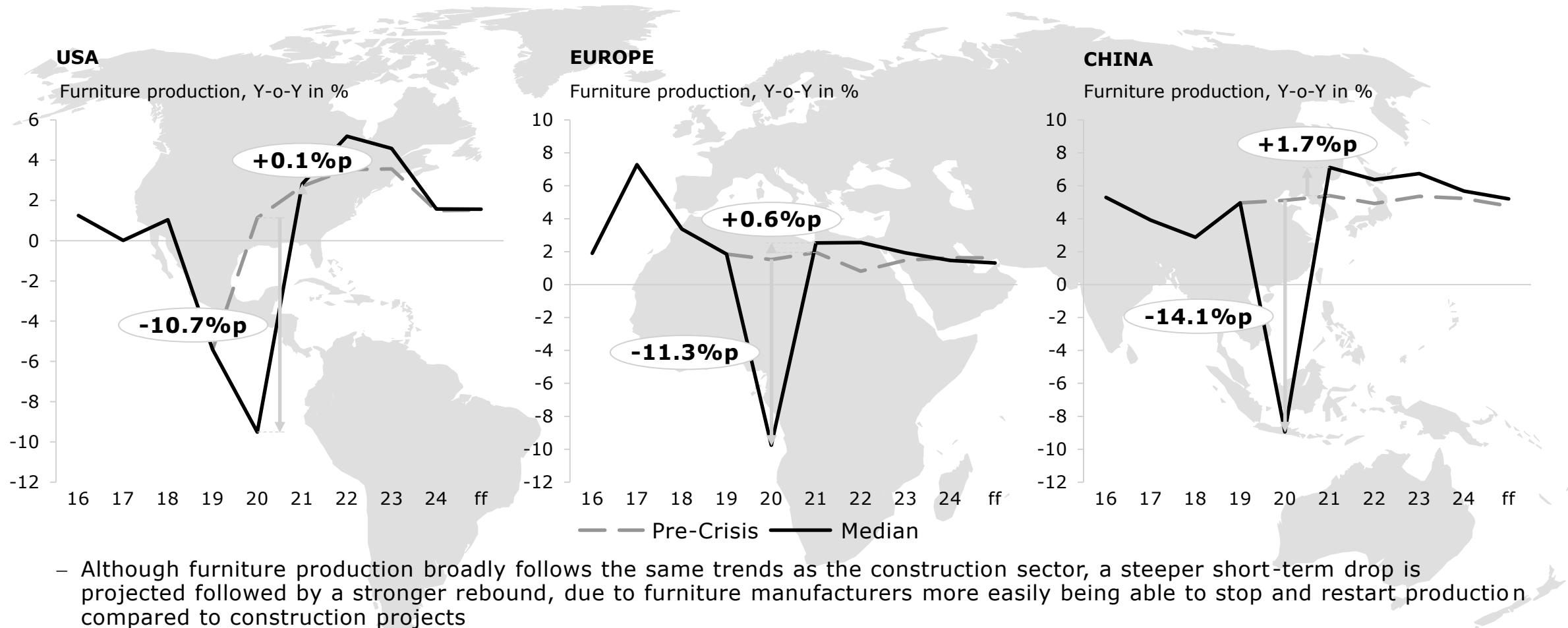
Construction spend across all regions will suffer short-term with a strong rebound in the median/ V-scenario



- While construction in Western Europe was still going fairly strong in March and April 2020, the construction sector in both USA and Eastern Europe suffered, resulting in short-term capacity reductions of up to -30% in OSB and plywood production
- Europe and China are projected to return to positive growth during 2021, catching up some lost growth into the medium term

SOURCES: IHS, AFRY

Widespread stoppages in furniture production due to Covid-19 are projected to result in double-digit declines in output across all regions in 2020

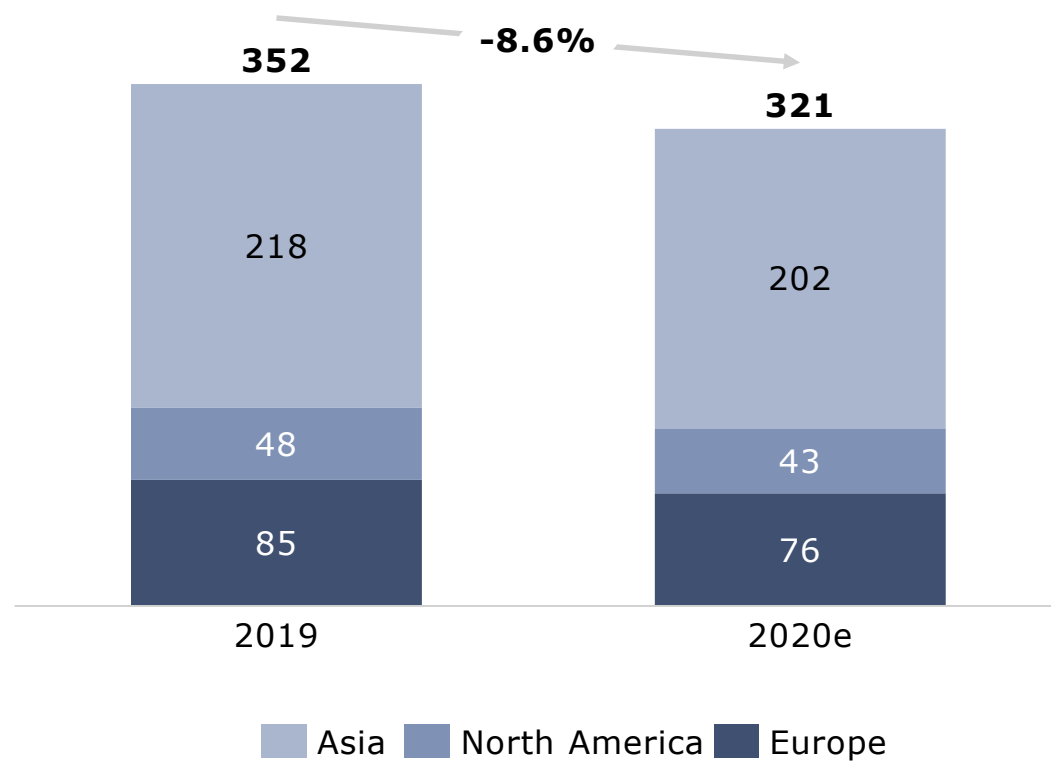


SOURCES: CSIL, AFRY

The global wood-based panels and sawnwood industries are projected to each shrink by ~30 million m³ in 2020

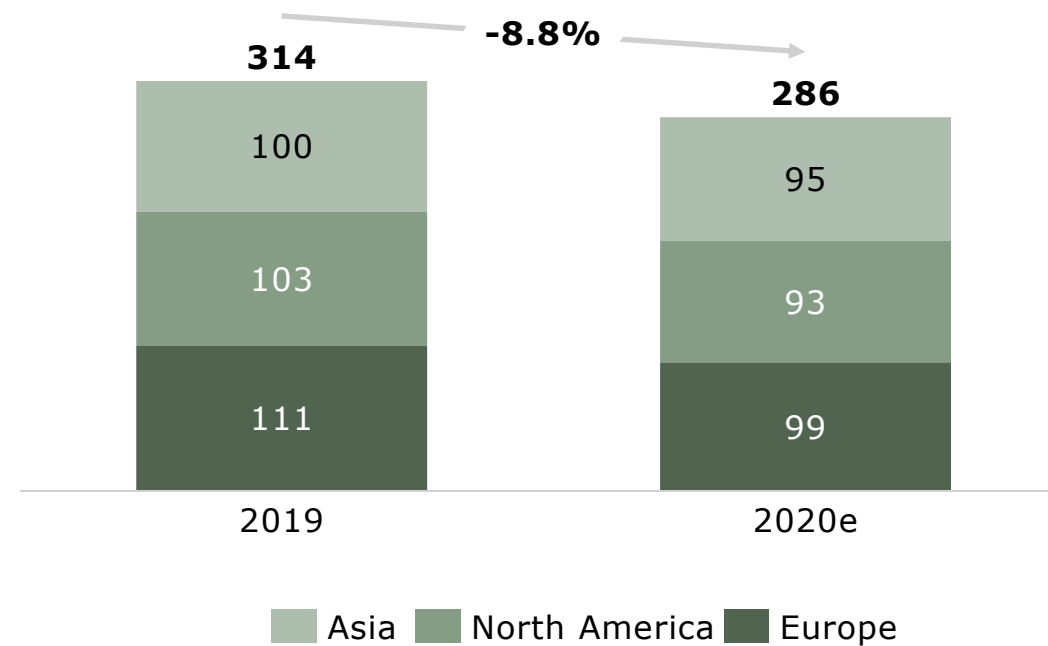
WOOD BASED PANELS (PB, MDF, OSB, PLYWOOD)

Million m³



SAWNWOOD/ LUMBER

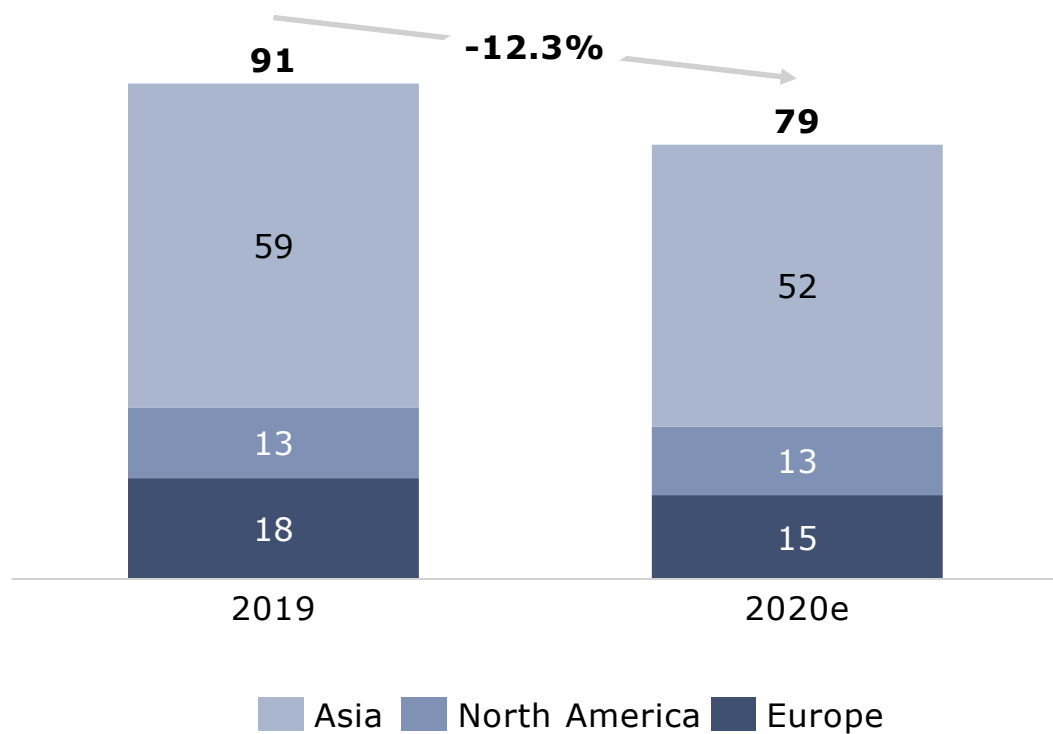
Million m³



Declining prices in Asia and Europe exacerbate the effects from the crisis; in North America increasing prices help to offset the volume decline

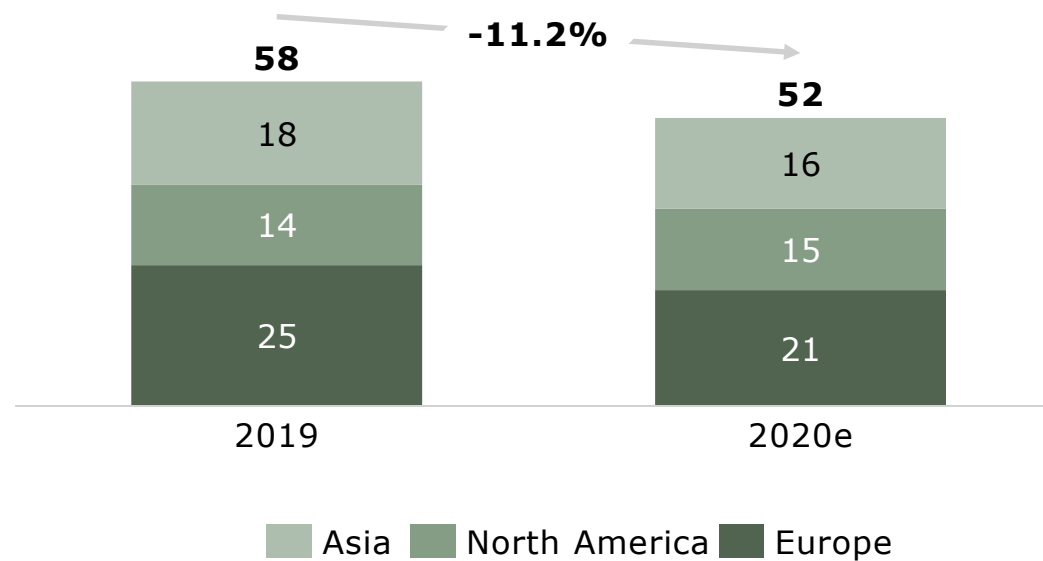
WOOD BASED PANELS (PB, MDF, OSB, PLYWOOD)

Bn EUR



SAWNWOOD/ LUMBER

Bn EUR



MARKET DRIVERS

Covid-19 is driving the wood product industry into a recession, actions will be taken to minimise the impact

NEGATIVE MARKET DRIVERS

- Major uncertainties in demand outlook for wood products and surfacing materials.
- Decorative panel demand suffers due to temporary production stops by furniture producers and low order intake as furniture retail stores are/ were closed.
- High inventories across all product categories along the value chain.
- Disruptions in the supply chains, impacting raw material sourcing and sales.
- Slow down in capacity expansion and new investments.
- M&A processes on hold.

POSITIVE MARKET DRIVERS

- Supply increase limited; slow re-start in Italy, Spain, France, Canada and China.
- Paying capability of buyers especially in China improving. China is actively but slowly improving after the first wave of Covid-19.
- Reconsolidation of wood products industry in China and competitiveness being enhanced.
- Furniture producers slowly re-starting production, furniture retailers (Ikea) re-opening stores.
- Moderate to positive outlook on construction spending, new build and especially renovation and modernization.

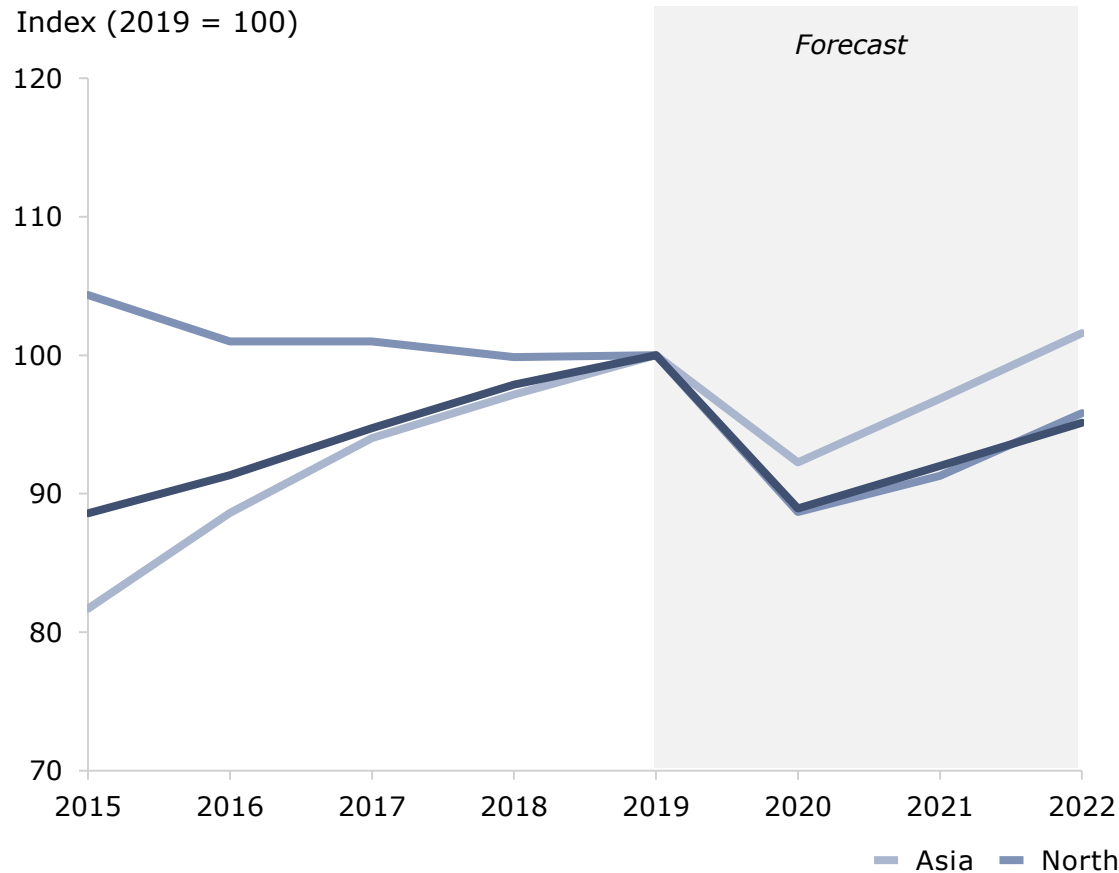




PB and MDF demand recovery has already started in Asia while both North America and Europe still experience significant demand uncertainties

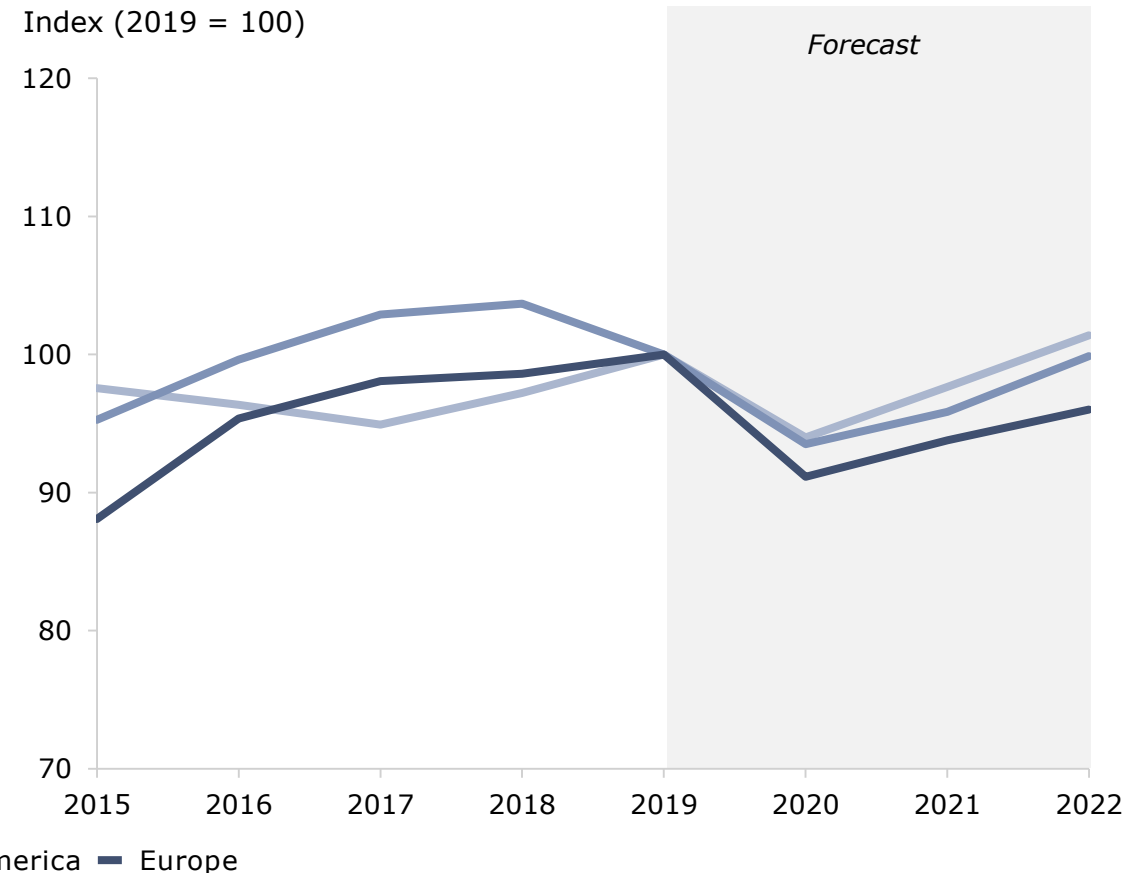
PARTICLEBOARD DEMAND

Index (2019 = 100)



MEDIUM DENSITY FIBREBOARD DEMAND

Index (2019 = 100)



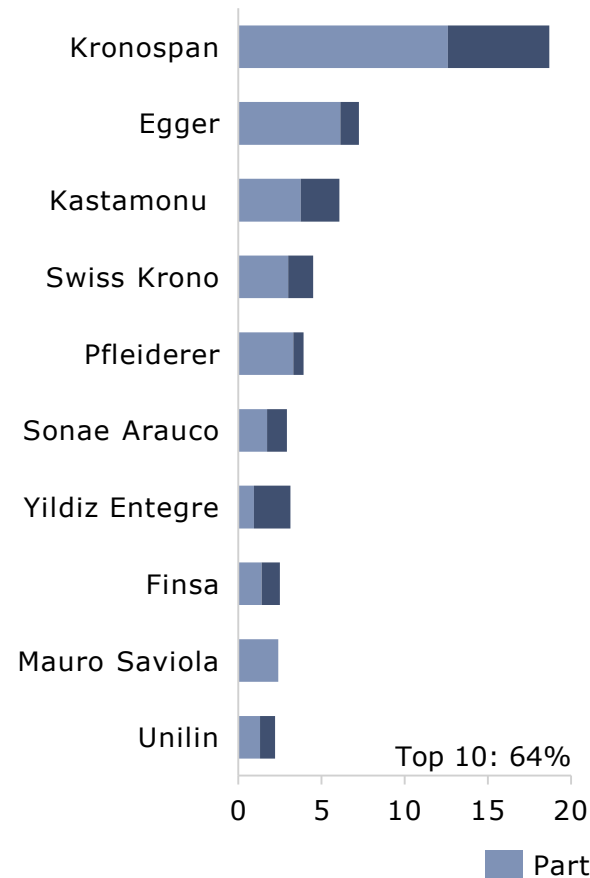
SOURCE: AFRY



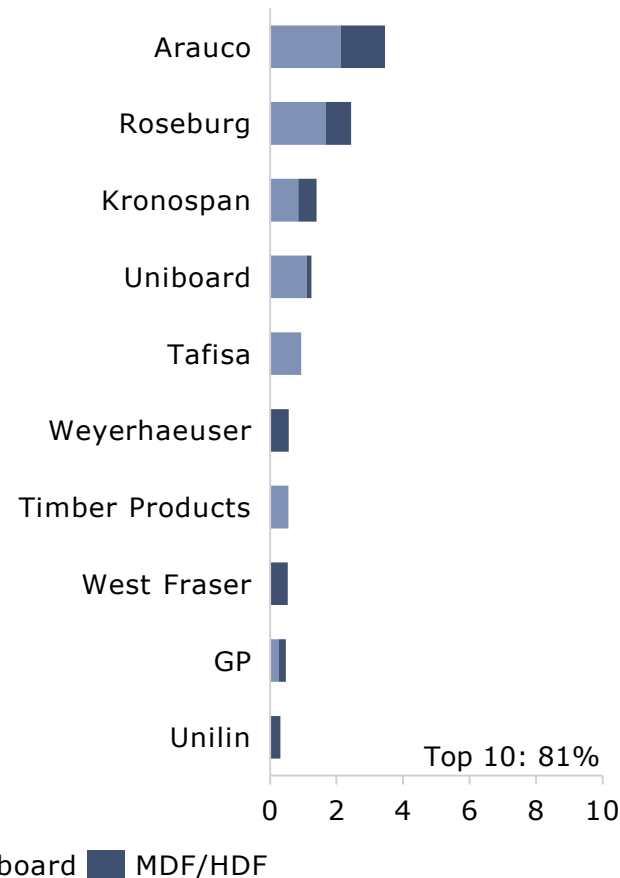
INSTALLED PARTICLEBOARD AND MDF/ HDF PRODUCTION CAPACITY Q2 2020

Covid-19 led to temporary capacity shut downs in both regions, impacted by temporary production shut downs in key customer industry (furniture etc.)

EUROPE (MILLION M³)



NORTH AMERICA (MILLION M³)



COVID-19 CAPACITY IMPACT

- Covid-19 resulting in temporary capacity shut downs in Europe and North America in Q2 2020
 - Up to -20 to -30% in Europe
 - Up to -25% to -35% in North America
- Permanent capacity shut downs in H1 2020 e.g. Arauco -650k m³ of PB and MDF in North America.
- Capacity re-start will be at reduced capacity utilization, overall utilization to drop in 2020.
- Capacity expansions/ capex spend are on hold or delayed e.g.
 - Egger, Lexington (NC), USA
 - Sonae Arauco, Beeskow, Germany
- Industry consolidation and M&A activity to increase post Covid-19 → industry structure to change in next 1-2 years.

Source: AFRY

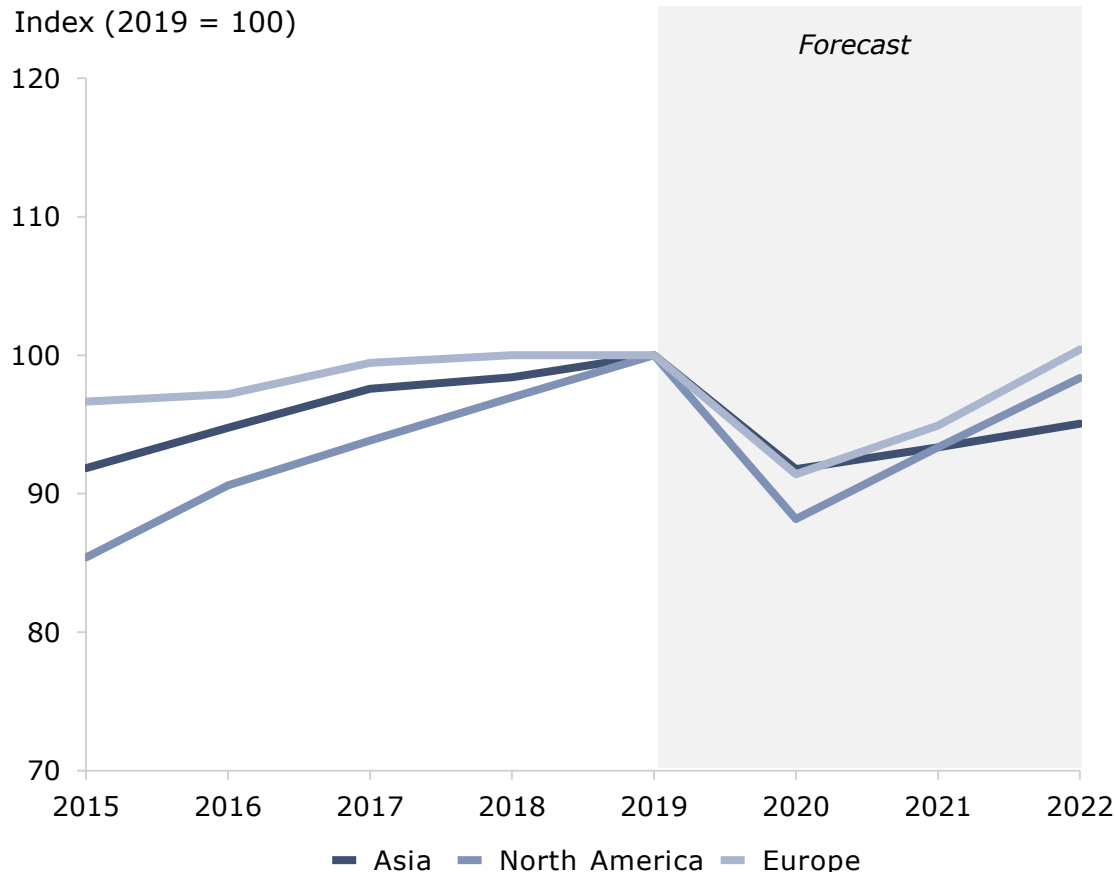


SURFACING MATERIALS DEMAND OUTLOOK "CENTRAL SCENARIO"

Surfacing material demand is suffering short-term but expected to re-bounce in 2021, driven by LPM (MFC/ TFL), Finish Foil and HPL/ CPL

PAPER BASED SURFACING MATERIALS DEMAND

Index (2019 = 100)



SOURCE: AFRY

COVID-19 IMPACT

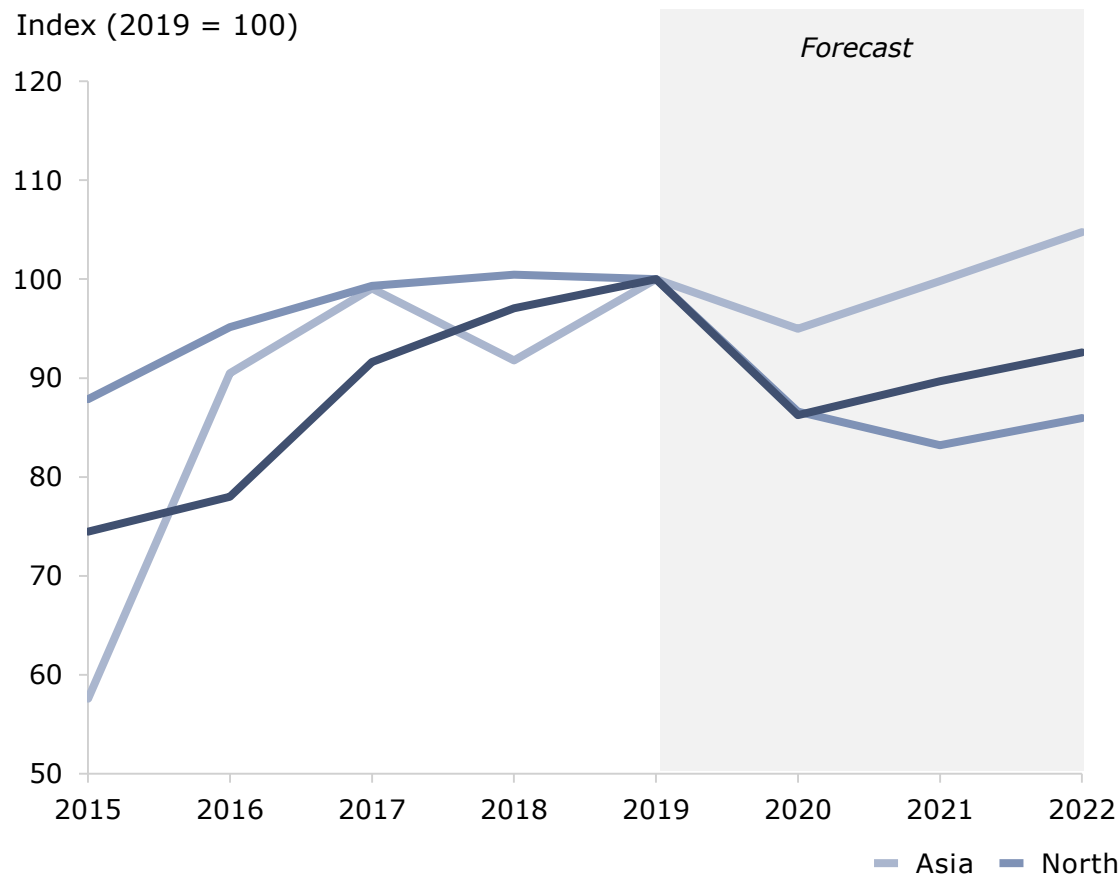
- Despite Covid-19, strong Q1 2020 sales and overall business performance by paper based surfacing material producers.
- Covid-19 resulting in demand drop of paper based surfacing materials from Q2 onwards due to temporary production shut downs in the wood-based panels and furniture sector.
- Re-start of wood-based panel and furniture production will positively affects surfacing material demand, however uncertainties will remain as consumer confidence (buying behavior) is low.
- Rebound in Asia has started but will be flat while re-bounce in Europe and North America will take longer, however will be stronger mid-term.



Rebound in Asia has started; DACH is positive driver for construction outlook post Covid-19 in Europe while uncertainty in North America remains

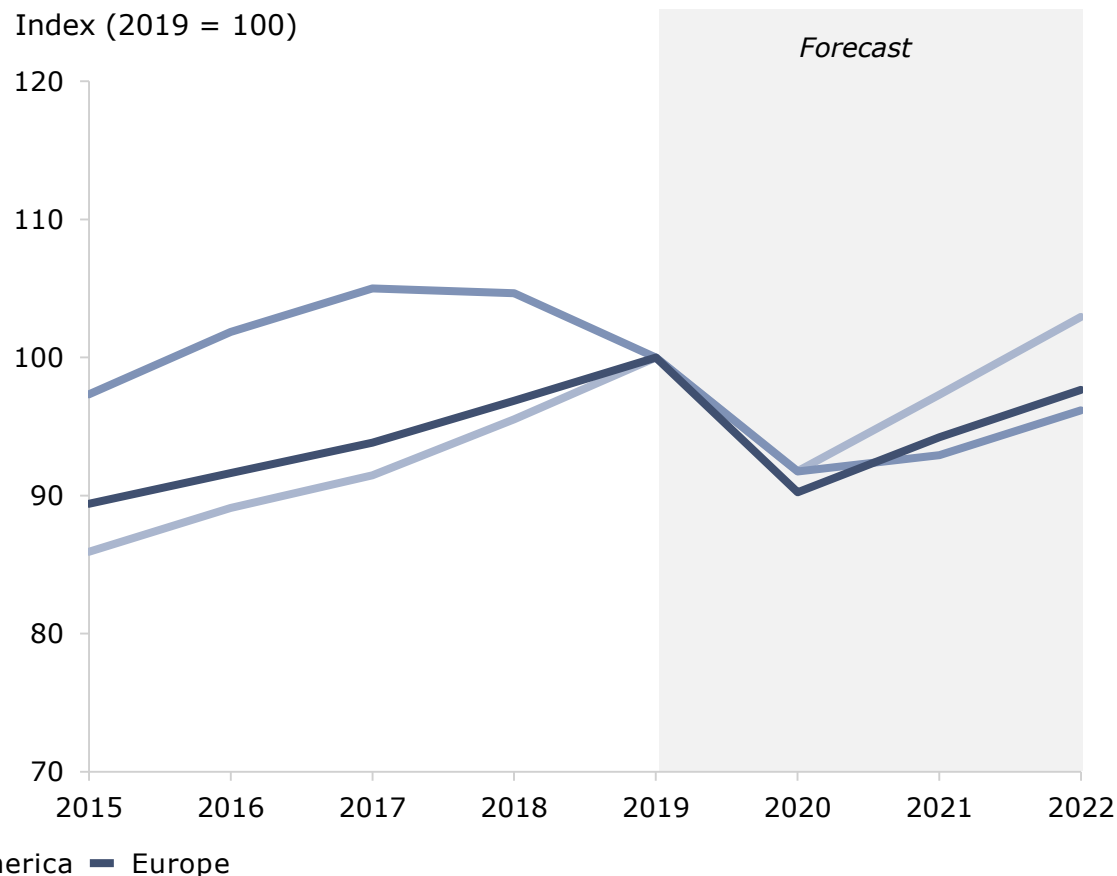
OSB DEMAND

Index (2019 = 100)



PLYWOOD DEMAND

Index (2019 = 100)

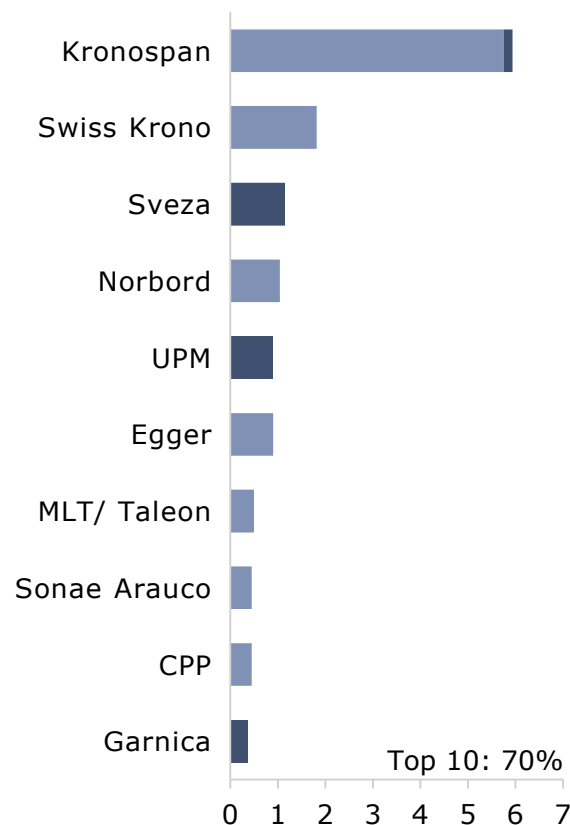




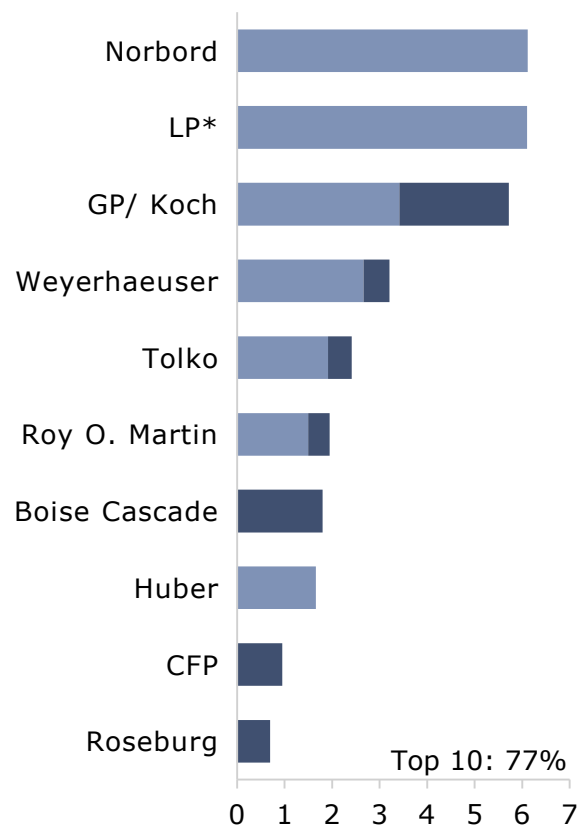
INSTALLED OSB AND PLYWOOD PRODUCTION CAPACITY Q2 2020

Only small OSB capacity adjustments in Europe, construction spending still positive, while capacity reduction in North America was more significant

EUROPE (MILLION M³)



NORTH AMERICA (MILLION M³)



■ OSB ■ Plywood

COVID-19 CAPACITY IMPACT

- Covid-19 resulting in temporary capacity shut downs in Europe and North America in Q2 2020
 - Less than -5% to -10% in Europe
 - Up to -20% to -30% in North America
- OSB capacity expansions in Europe to continue e.g. Germany, Ukraine and Russia while several OSB sites in North America will remain curtailed.
- Technically outdated capacity is expected to be permanently shut down, announcement expected in H2 2020, focus on USA, Russia and CIS.
- Post Covid-19 → industry consolidation is expected to continue as M&A targets are available in both regions.
- Top 10 in North America is more diverse, 4/10 players produce both OSB and plywood while only one company produces both products in Europe.

Source: AFRY

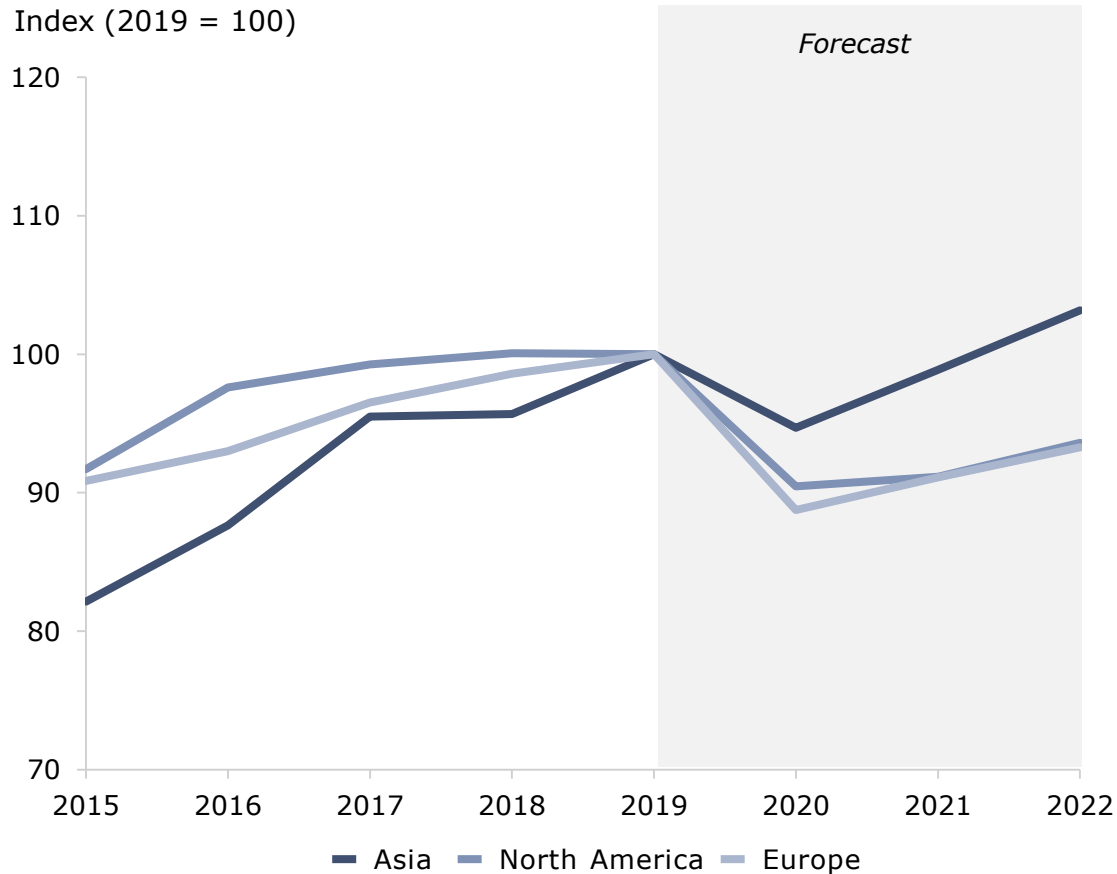
Note: *LP includes siding capacity

SAWNWOOD/ LUMBER DEMAND OUTLOOK "CENTRAL SCENARIO"

Demand is expected to decline globally in 2020. Europe and North America are hit hardest with slow recovery

SAWNWOOD/ LUMBER DEMAND

Index (2019 = 100)

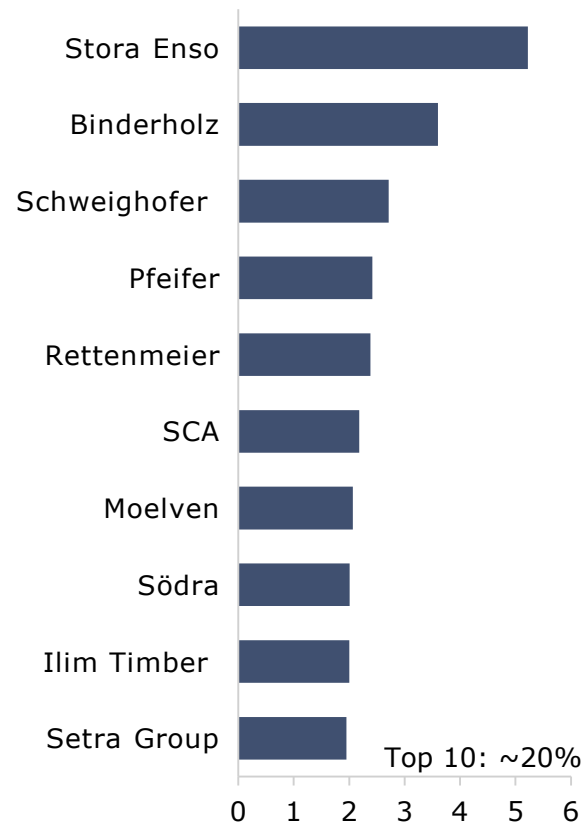




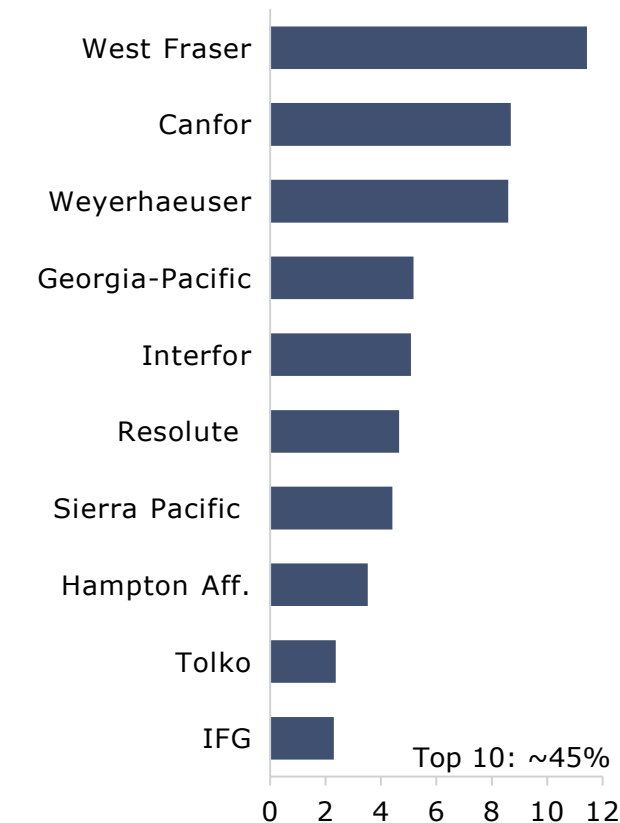
INSTALLED SAWNWOOD PRODUCTION CAPACITY Q2 2020

Capacity reductions have been more significant in North America in Q2/2020. Situation varies between in European countries

EUROPE (MILLION M³)



NORTH AMERICA (MILLION M³)



■ Sawnwood

COVID-19 CAPACITY IMPACT

- Covid-19 resulting in production reductions in Europe and North America in Q2 2020
 - Up to -10 to -15% in Europe
 - Up to -20% to -30% in North America
- U.S. housing starts declined sharply in March and the sawn softwood demand started to deteriorate. All major players in North America have curtailed production both in the US and Canada and some mills have been temporarily shut down.
- Austrian sawmills were hit by the Italian epidemic already in March and started to reduce production. German mills started to reduce working time in April after relatively good production levels in March.
- Demand for Nordic mills has been reasonable in Asia and exports to Europe have suffered more from the lockdown of the economies. Finnish mills were forced to reduce production already during the first quarter due to labor disputes and many mills are reducing production also in Q2 due to market reasons. Several Swedish mills have also introduced shorter working time.

Source: AFRY

SUMMARY

Wood products sector - during and after COVID-19

WORLD DURING AND AFTER COVID-19



- U.S. manufacturing and economic indicators were up before Covid-19. Now, short term GDP projections continue to be downward revised to before unforeseen levels as uncertainty continues. China experienced long downtime during/ after Chinese New Year, re-start was positive.
- Coronavirus has changed consumer habits. Some of those changes will continue to reshape the marketplace after the breakout is controlled. The wood product sector has the challenge & opportunity to respond and restructure to be aligned with the world after Covid-19.

WOOD-BASED PANELS



- Demand for decorative panel products is suffering due to significant disruptions (furniture production stopped) along the supply chain while structural panels still benefit from positive construction spending in Europe.
- Post Covid-19, moderate to strong demand re-bound for both decorative and structural panels expected, however impact and speed will vary by geography (North America, Europe and Asia).

During:

After:

PAPER BASED SURFACING MATERIALS



- Demand likely to experience negative impact during Covid-19. But, there is an upside with plastic/ veneer substitution.
- Wood-based panel re-bound is positive for surfacing materials, in addition new and replacement investments in laminating (short cycle presses and foiling lines) capacity.

During:

After:

SAWNWOOD/ LUMBER



- Sawnwood demand is significantly affected by the national restrictions and their consequences for the economy, which caused a decreasing demand especially for construction sawnwood and low orders due to general uncertainty.
- Demand for construction assortments is expected to pick up again in the course of 2020 globally, whereas the DIY and packaging sector have performed surprisingly strong throughout the crisis.

During:

After:

SUMMARY

Global wood products value chains are disrupted with this expected to continue throughout the coming months

Canada: Furniture production suffered, especially office and kitchen. Wood-based panel production was temporarily stopped, only moderate production volumes of PB and MFC/ TFL after re-start in April 2020.

US: Capacity in OSB, plywood and lumber temporarily reduced by -20 to -35%. Furniture stores closed while big box (DIY stores) operate strongly. Unemployment severely hit, paying capability shrinking mid-term.

Western Europe: Various countries are re-starting public life, the furniture sector is severely hit, resulting in production stops in the panel, surfaces and sawnwood industries. Construction spending still moderate to strong in Q2, further recovery expected in H2 2020, positive for OSB and plywood as well as sawnwood demand.

China: Long downtime during and after Chinese New Year. Production re-start in wood processing industry has reached 70% of previous year level. Domestic demand is picking up too. Industry consolidation to continue after Covid-19.

Latin America: The increasing number of confirmed Covid-19 cases in Latin America has forced several local governments to close borders, order lock downs and demand people to stay at home. The crisis has resulted in wood-based panel sites temporality shutting down production, also impacting surfaces producers and others players along the value chain.

India: There is stalled production due to the national lockdown but also due to shortage of raw material for wood-based panels and HPL. Production of these products is not categorized as 'essential commodities' and thus production is restricted. This might have an effect on availability of products.

Southeast Asia: Dependency on export markets led to temporarily production stops in panels and furniture. Supply chain is impacted, borders to export markets need to re-open. Risk of second Covid-19 wave in H2 2020.

CONTACT INFORMATION

Global disruption: the impact of Covid-19 on the wood products sector

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AFRY INTRODUCTION

In February 2019 ÅF and PÖYRY merged and became AFRY as of November 2019 with more than 16,000 experts globally



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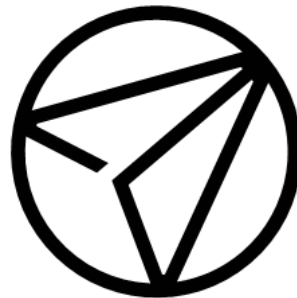


FTE 10,500



FTE 5,500

Brand launch in November 2019



AFRY

ÅF PÖYRY

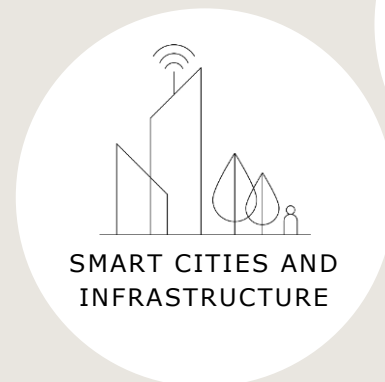
At a glance

Locally present in **50+ countries**

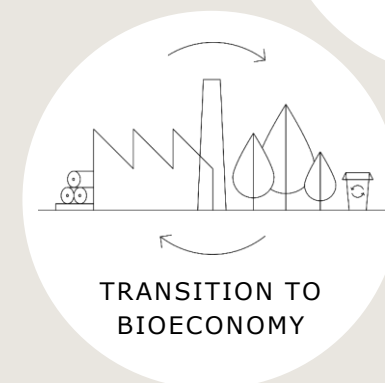
Projects in **100+ countries**

Revenue **~2 bn EUR** in 2019

Experts **17,000**



5
growth drivers



ENGINEERING	DESIGN	DIGITALISATION	ADVISORY SERVICES	SECTOR EXPERTISE
Owners/Lenders engineering Detail engineering Operational services Project management & execution Technical studies	Architecture Urban planning Digital/UX design Lighting & Sound design Product design	Software engineering / development AI / Robotics / Drones / 5G System integration and management	Forward looking market analysis Strategic advice Operational excellence Transactions services	Core sectors: Energy Bioindustry Process Industry Automotive Infrastructure

We are organised in five divisions

INFRASTRUCTURE



Malin Frenning

6,350 FTE
Operations in Nordics
and Central Europe

INDUSTRIAL & DIGITAL SOLUTIONS



Robert Larsson

3,850 FTE
Operations in
Nordics

PROCESS INDUSTRIES



Nicholas Oksanen

3,150 FTE
Operations in 5
continents

ENERGY



Richard Pinnock

2,100 FTE
Operations in 3
continents

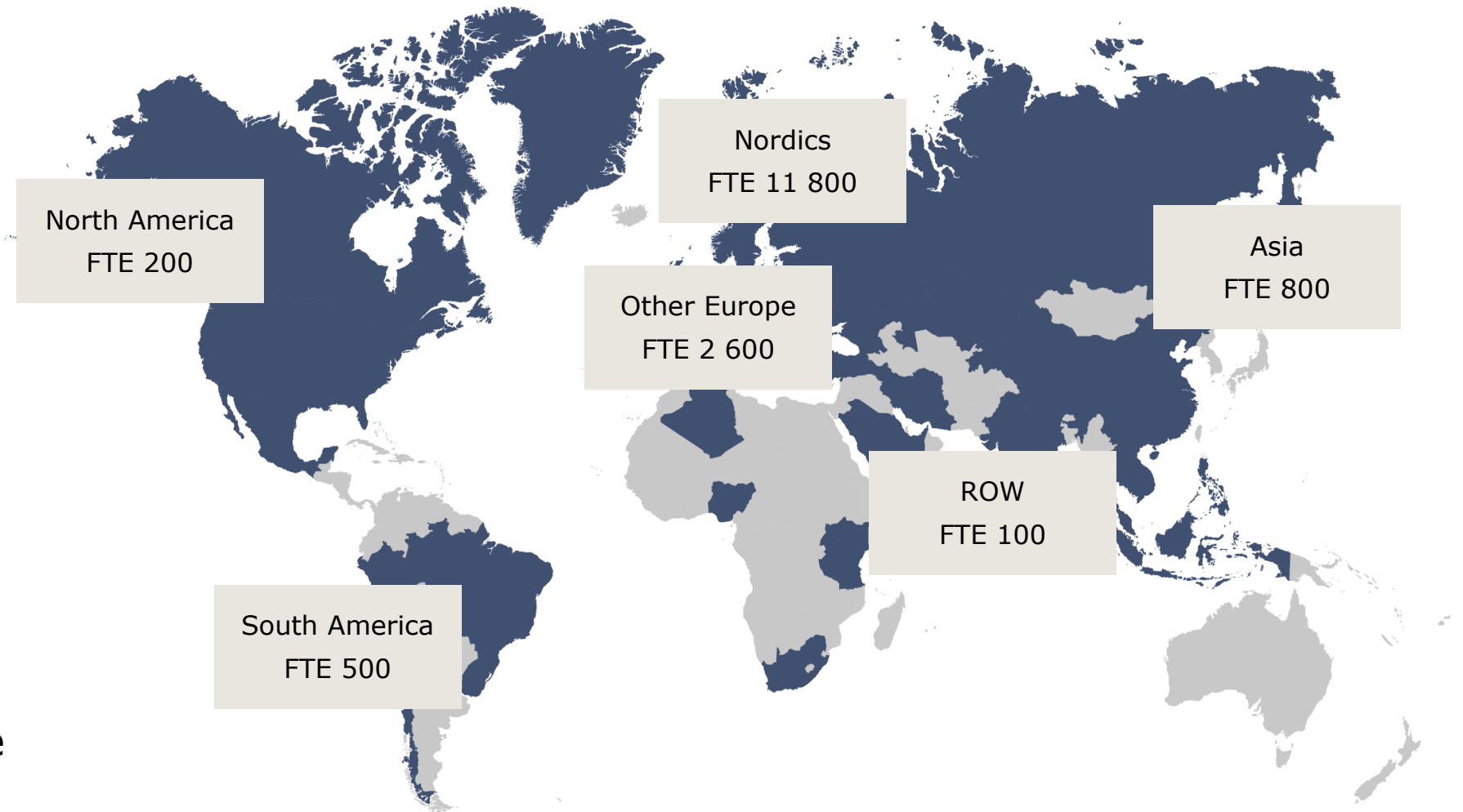
MANAGEMENT CONSULTING



Roland Lorenz

450 FTE
Operations in 3
continents

Nordic base with strong global presence



Our presence

We are organised in five divisions



INFRASTRUCTURE

Transportation
Buildings
Project Management
Water
Environment
Architecture &
Design



PROCESS INDUSTRIES

Bioindustries
Chemicals
Metal & mining
Health & safety
Environment
Smart Site TM &
Digitalisation



INDUSTRIAL & DIGITAL SOLUTIONS

Advanced Automation
Automotive R&D
Experience Design
Food & Pharma
Specialized Tech
Services
Systems Management



ENERGY

Thermal &
Renewables
Hydro
T&D
Nuclear
Contracting



MANAGEMENT CONSULTING

Energy Sector
Bioindustry Sector incl.
Wood Products
Market Analysis
Strategic Advice
Operational Excellence
M&A and Transactions

Our service offerings



STRATEGIC ADVICE

- Portfolio strategy
- Growth strategies
- Business strategies and plans
- Pricing strategies
- Business model development
- Raw material sourcing and supply strategies
- Carbon strategies
- Scenario analysis
- Risk management
- Environmental strategies
- Market entry strategies
- Cooperation strategies
- Technology strategies
- Innovation and R&D strategies



OPERATIONAL EXCELLENCE

- Performance improvement
- Benchmarking
- Corporate restructuring
- Organizational design
- Business transformation
- Supply chain optimization
- Change management
- Post merger integration
- Energy efficiency
- Asset Management
- Maintenance models



MARKET INSIGHTS AND MODELING

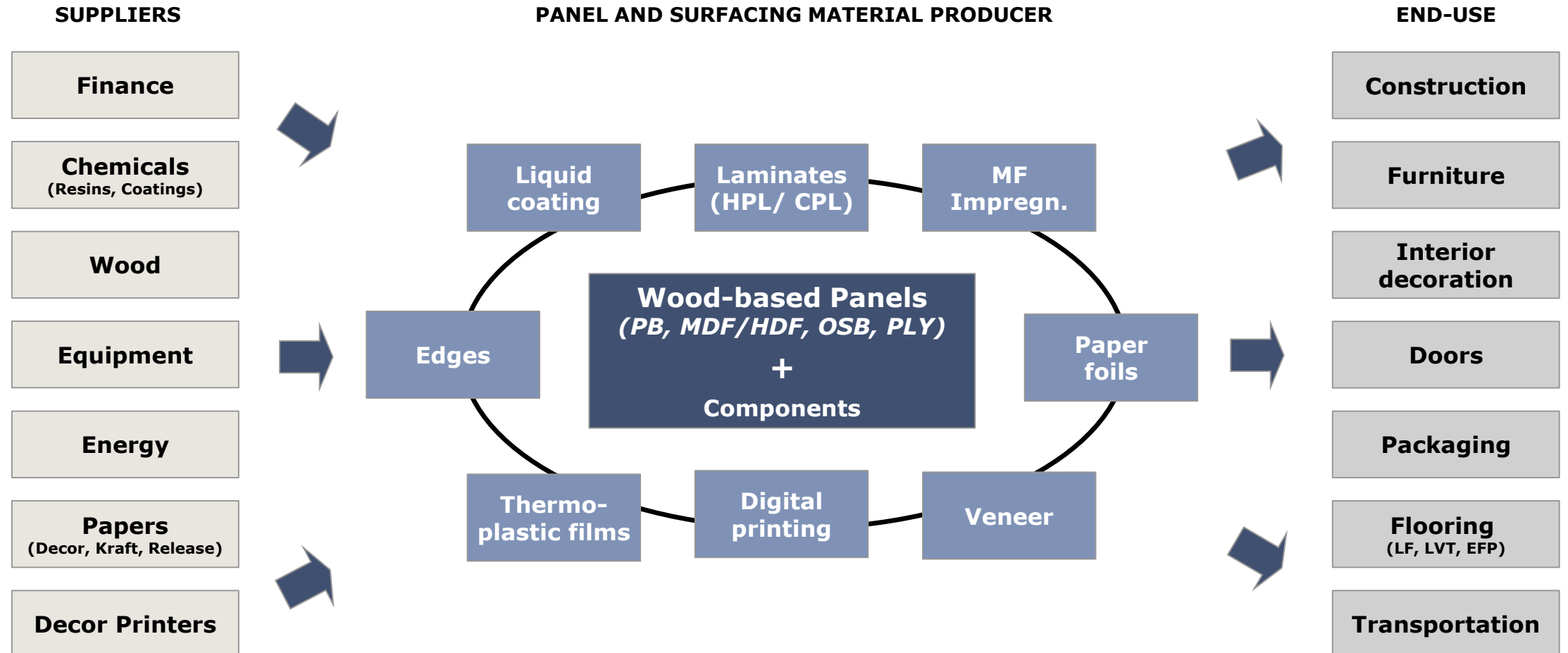
- Market analysis and forecasts
- Demand, supply, and cost analysis
- Price projections
- Industry cost curves
- Market design and modeling
- Market regulatory frameworks
- Market scenarios
- Economical, environmental and social analyses & impact assessments



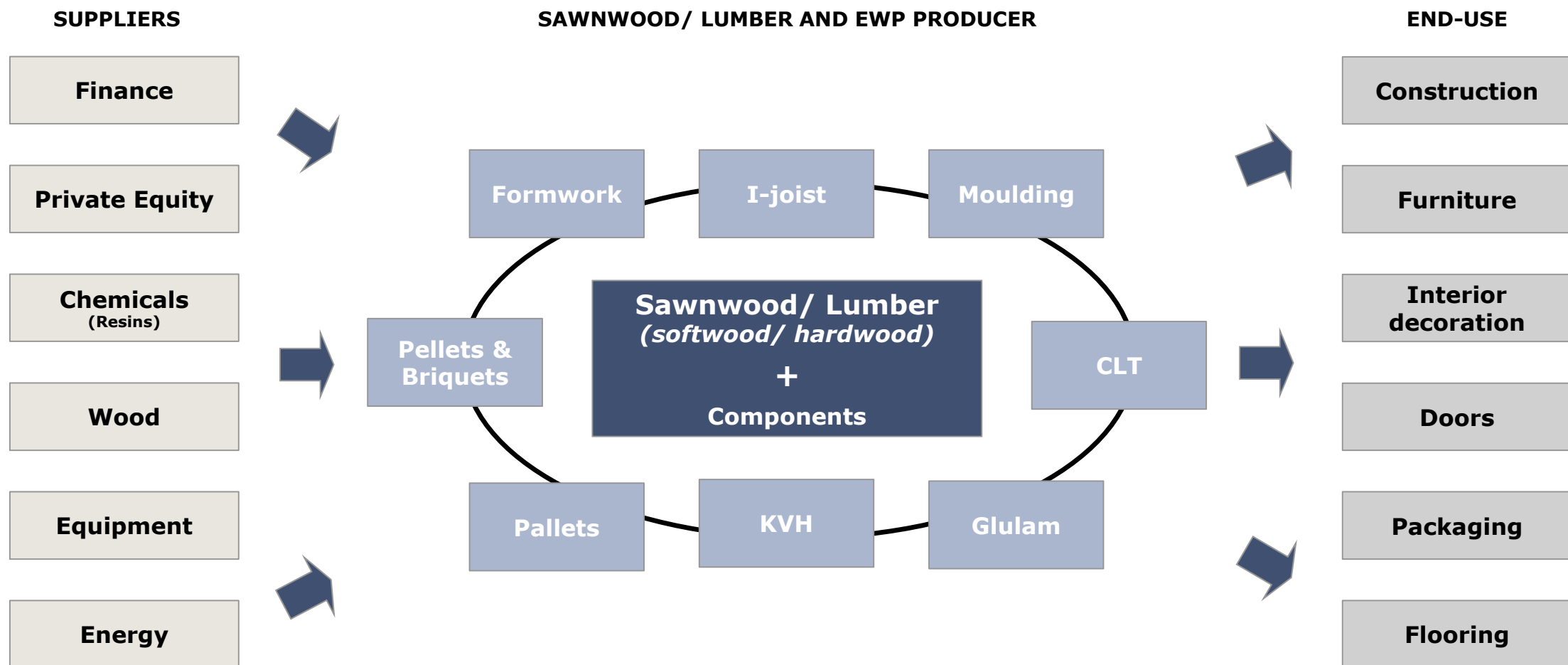
INVESTMENTS AND M&A

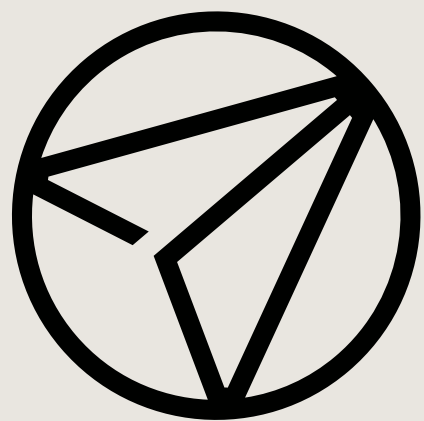
- Acquisitions
- Divestments
- Asset valuations and development
- Business valuations
- Investment analyses, Pre-feasibility / feasibility assessments
- Bankable documentation
- Due Diligence (Commercial, operational, technical, environmental)

AFRY works along the entire decorative and structural wood-based panel value chain and is best positioned to support its customers



AFRY works along the entire sawnwood and engineered wood products value chain and is best positioned to support its customers





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