



Winning Strategic Edge in Pulp & Paper Segment

SOMNATH RAY | AFRY MANAGEMENT CONSULTING

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globally



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more than 100
countries



global net
sales
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offices in about
50 countries

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Paper, Packaging
& Hygiene

Wood Products

Renewable Fuels
& Chemicals

Pulp & Textile
Fibres

Forest, Biomass &
Carbon

Waste & Recycling

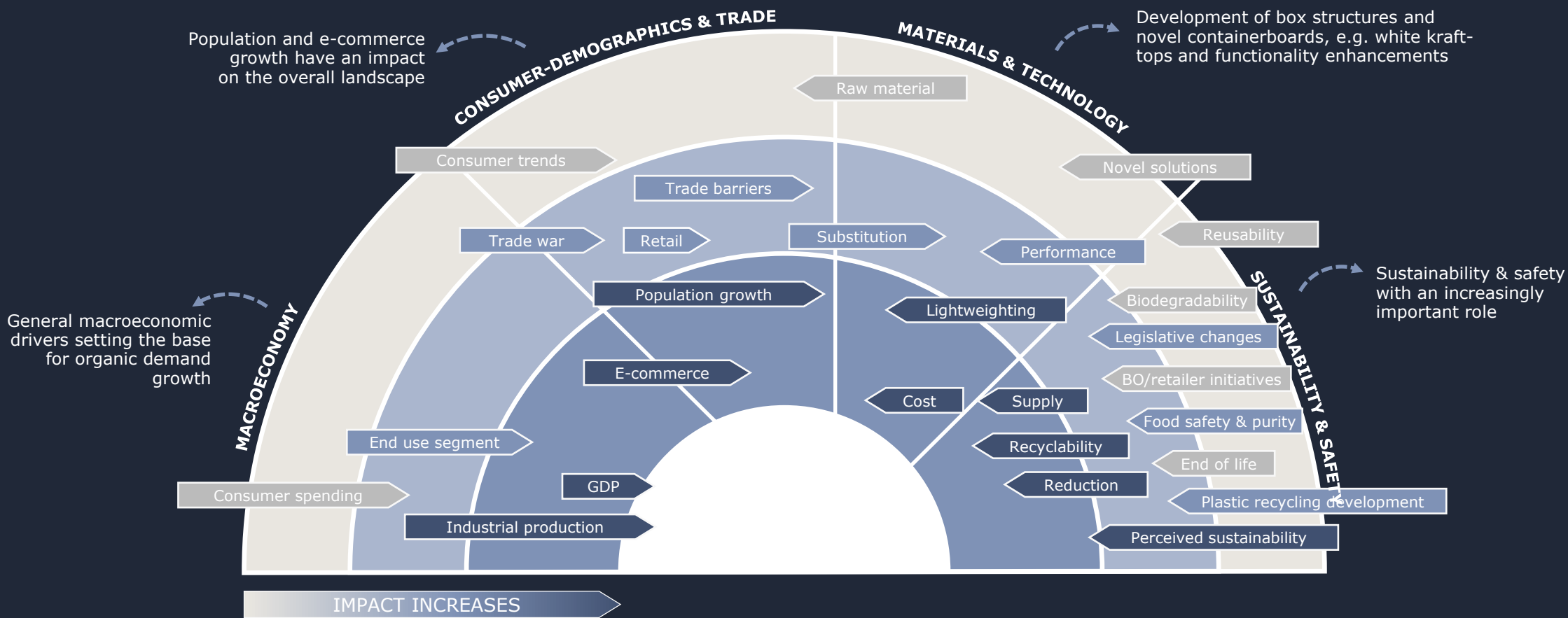
Energy

Sustainability

Agenda Overview



Of the four main driving forces impacting the fibre-based packaging business, sustainability has become increasingly important



Speciality papers are growing at a higher rate to traditional commodity papers, although starting from smaller market volumes

DEMAND GROWTH DRIVERS

Regulatory & Trade Dynamics

- Regulatory changes (New frameworks e.g., PPWR, EUDR)
- Extended producer responsibility
- Tariffs/Trade Tensions (U.S. tariffs, China’s waste import bans)

Sustainability & Circular Economy

- Sustainability (Optional to Mandatory)
- Plastic Substitution (Triggering new functional solutions)
- Carbon Neutral Pathways (Carbon reduction & enabler of a bio-based economy)

Raw Material & Cost Pressures

- Fiber Shortages, Alternative fibers and volatility
- Energy cost/efficiency
- Digitalization & Automation (efficiencies)

GDP and Consumer behavior

- Access to disposable income
- Shift to urban lifestyle
- Shift to greener and sustainable products

PAPER DEMAND GROWTH

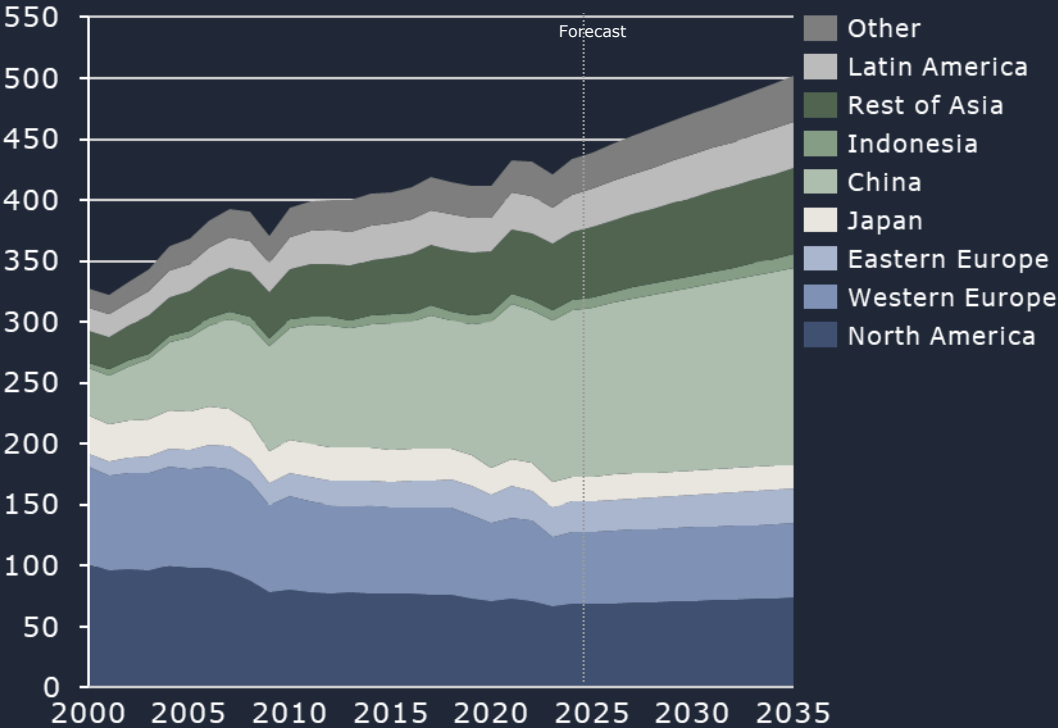


Cartonboard Specialties	+4% ↑
Industrial Specialties	
Moulded Fibre	
Grease Resistant/Proof Papers	
Transfer Papers	+3% ↑
Luxury Packaging	
Release Papers	
Medical Papers	
Cartonboard	+2% ↑
C1S and Kraft	
Panel Industry	
Tissue	
Containerboard	+1% ↑
Electrical Papers	
Graphics Specialties	
Wrapping and Packaging	
Security Papers	< 0%
Containerboard Specialties	
Filter Papers	
Graphic Papers	
Newsprint	

Emerging economies are driving the additional paper consumption; mature economies are still heavily exposed to the secular graphics paper decline

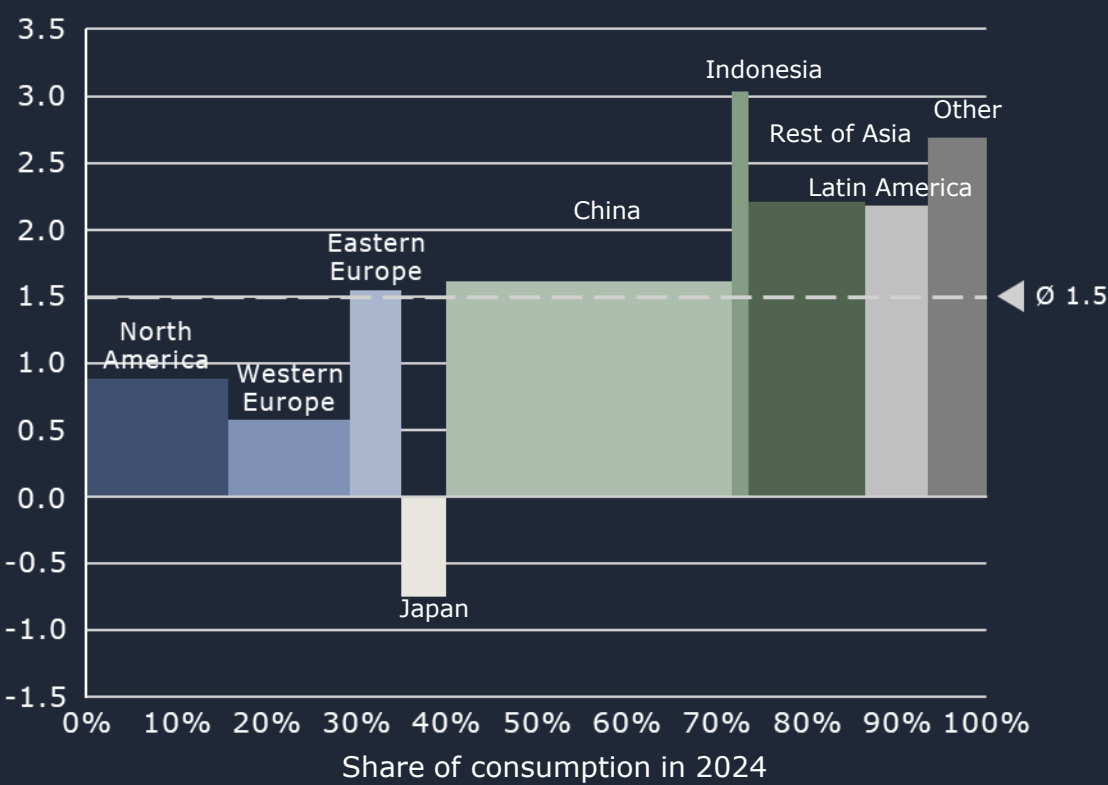
DEMAND BY REGION 2000-2035

Million t/a



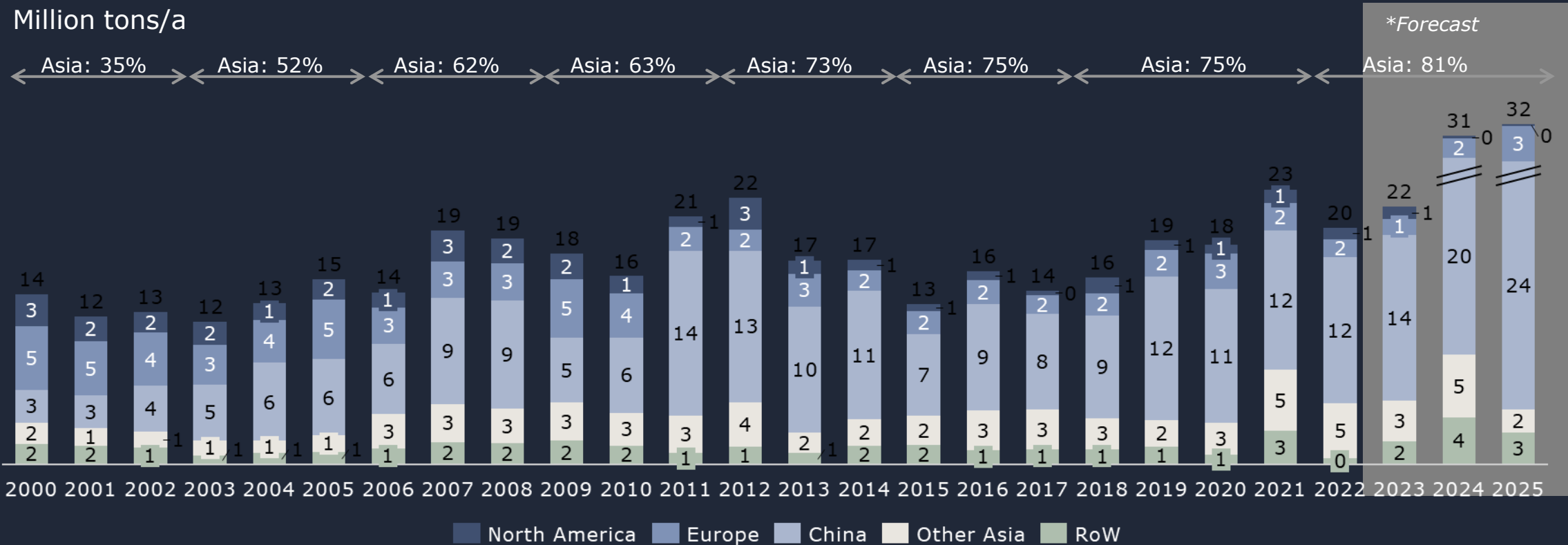
LONG-TERM DEMAND GROWTH (TILL 2035)

Demand growth, %/a



Paper industry investment activity has permanently shifted to Asia, especially China

Million tons/a

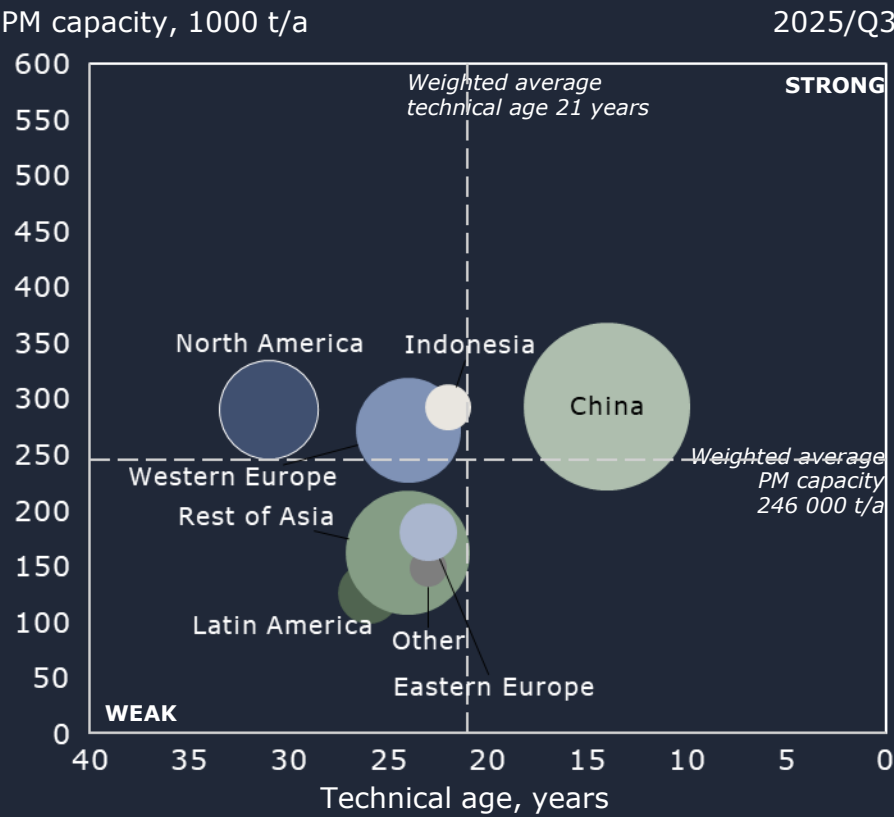



– The share of Asia has grown from 35% in the early 2000s to 60-65% in the early 2010s and 70-80% in the past few years and is expected to maintain at similar level driven by another round of capacity expansion in China and other Asian regions.

¹⁾ New PMS, 2nd hand machines, rebuilds and capacity expansion by start-up year Note: 2022-2025 investment includes decided and planned projects

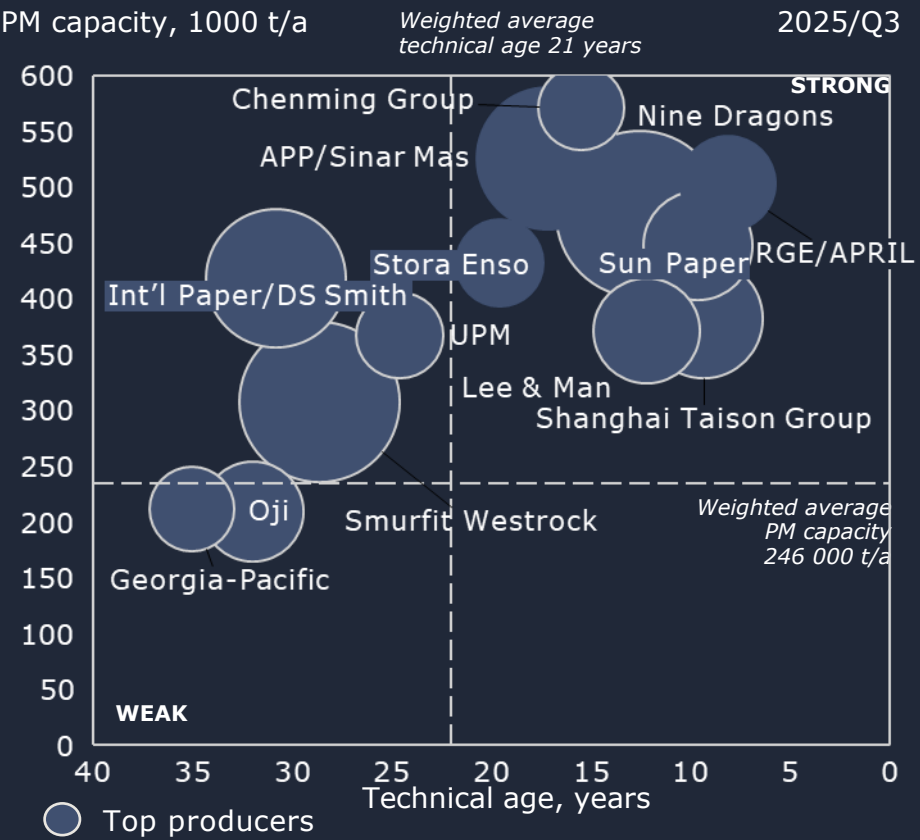
China stands out as the largest and most modern paper producing region


REGIONAL ASSET QUALITY



 Bubble size reflects the allocated grade capacity

TOP PRODUCER ASSET QUALITY



 Top producers

Agenda Overview



A range of strategic approaches is needed to be competitive...

MARKET & PRODUCT DIVERSIFICATION

- **Focusing on multiple intra- and inter-ASEAN markets** utilizing trade relations and market synergies
- Development of **alternative (new) product offering**

INTEGRATION

- **Fiber and converting integrations** to reap higher cost efficiencies
- **New Revenue streams** (through new side streams)

OPERATIONAL EFFICIENCY

- **Time and material efficiency improvement**
- Digitalization / Automation
- **Asset repurposing**

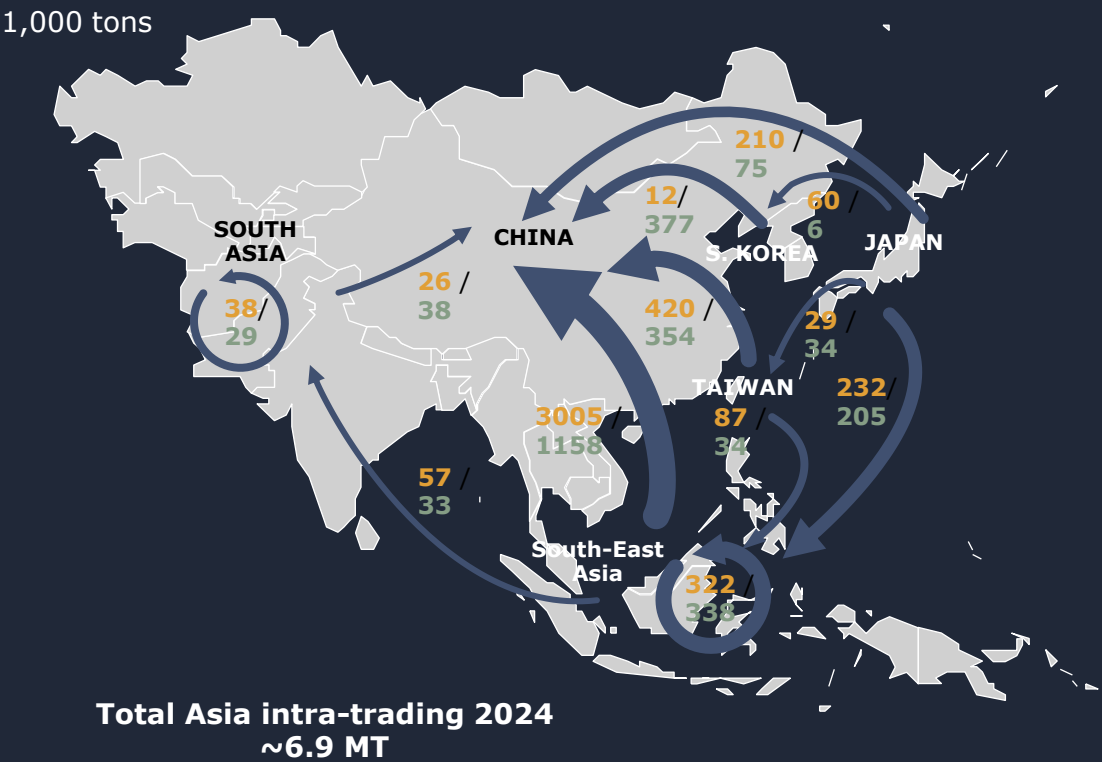
OTHERS

- **Sustainable practices**
- **M&A / Partnerships** to be close to markets / customers



Recycled containerboard is traded intra-regionally, with more sourcing through South-East Asian countries

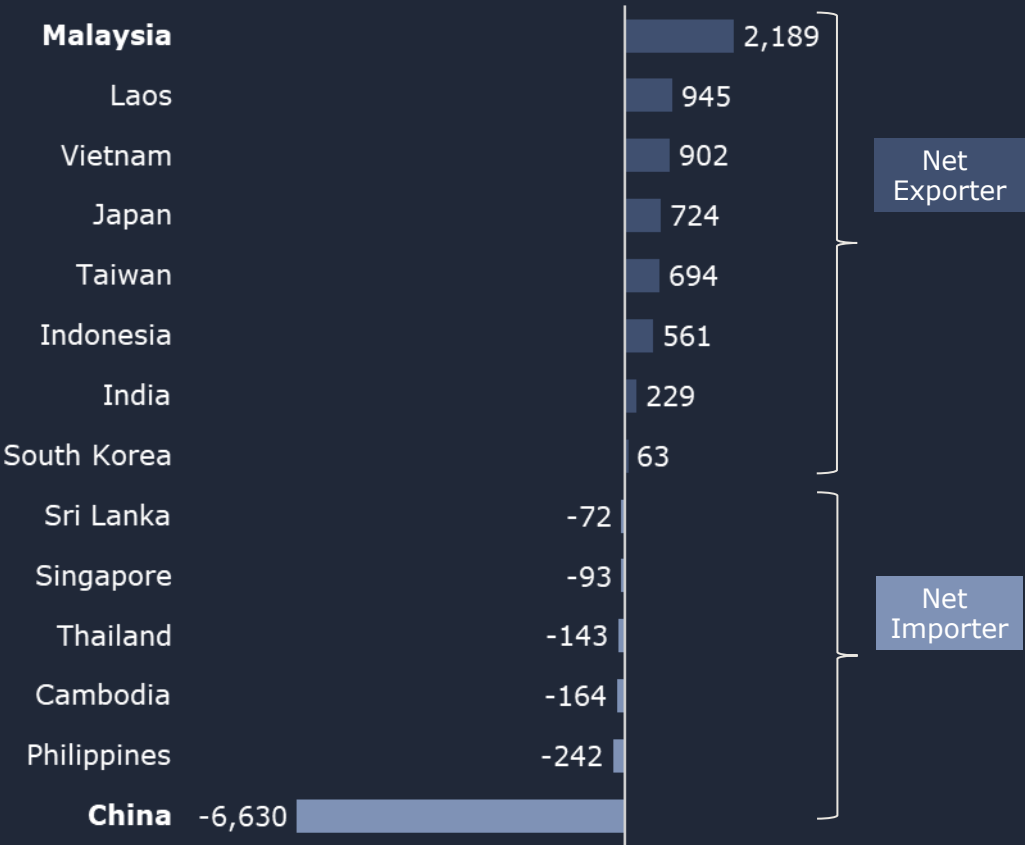
RECYCLED CONTAINERBOARD MAIN TRADE FLOWS 2024 – ASIA



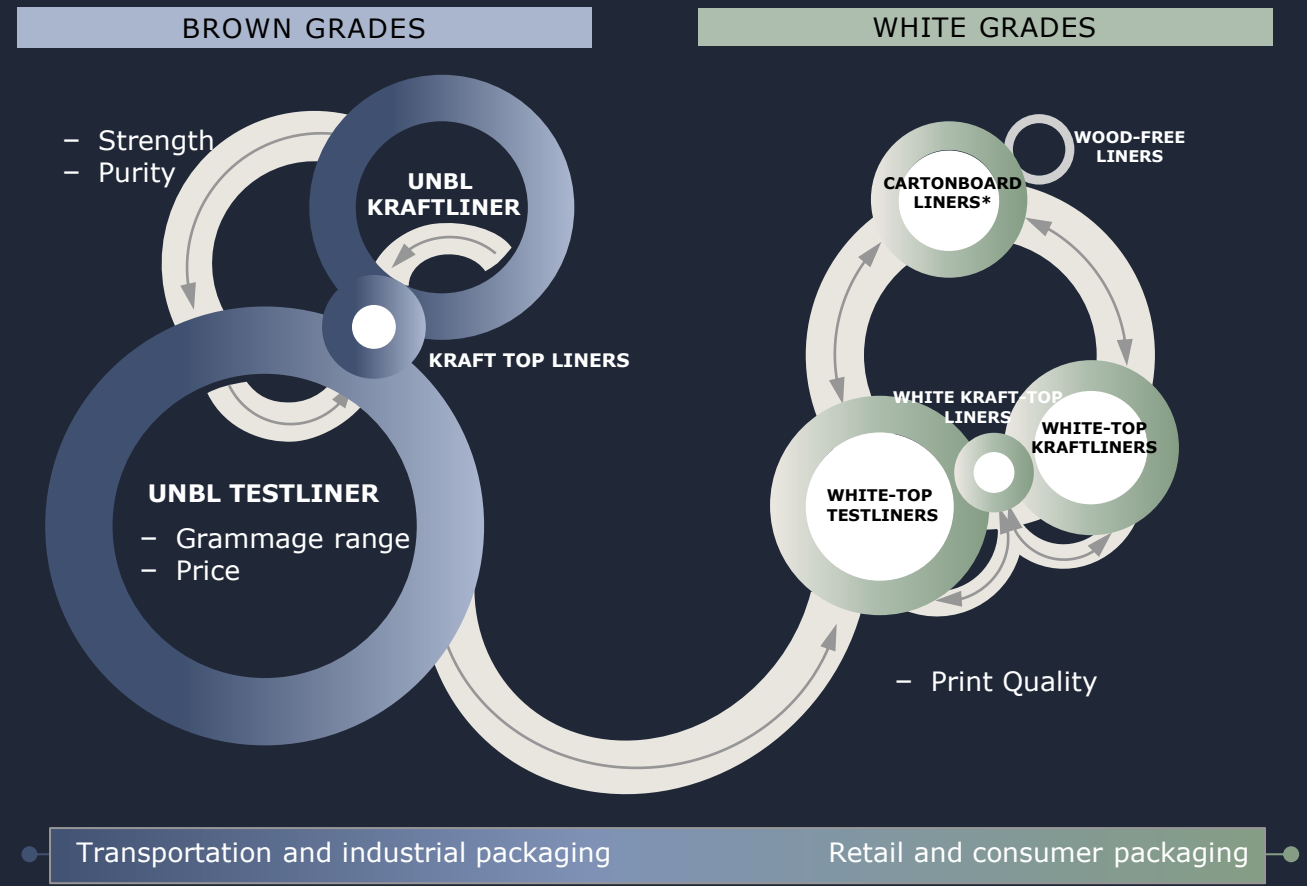
Testliner / recycled fluting

Source: UN Comtrade Database, ITC Trademap, BPS

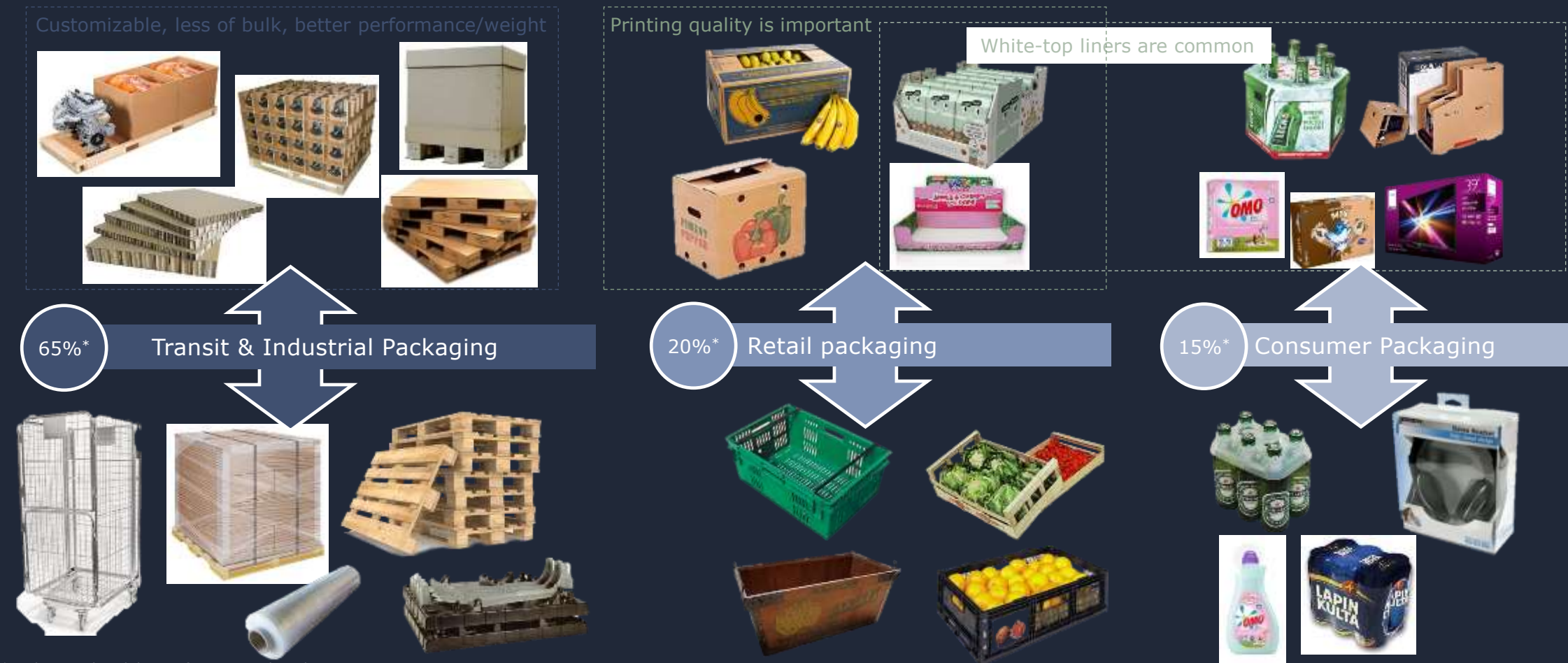
NET TRADE BALANCE 2024, KT



More individualized packaging is driving substitution opportunities – together with a combination of price, functionality, basis weight and quality



There are many competing packaging solutions, but paper packaging is strong in its current applications because of the sustainable image



* Indicative breakdown of corrugated packaging

PfR trade is dominated by fluxes towards Asia – flows from North America & Europe have shifted from China to other Asian countries

1,000 t

Total international trade (OCC and mixed paper)

- OCC 24.8 million tons
- Mixed paper 8.4 million tons

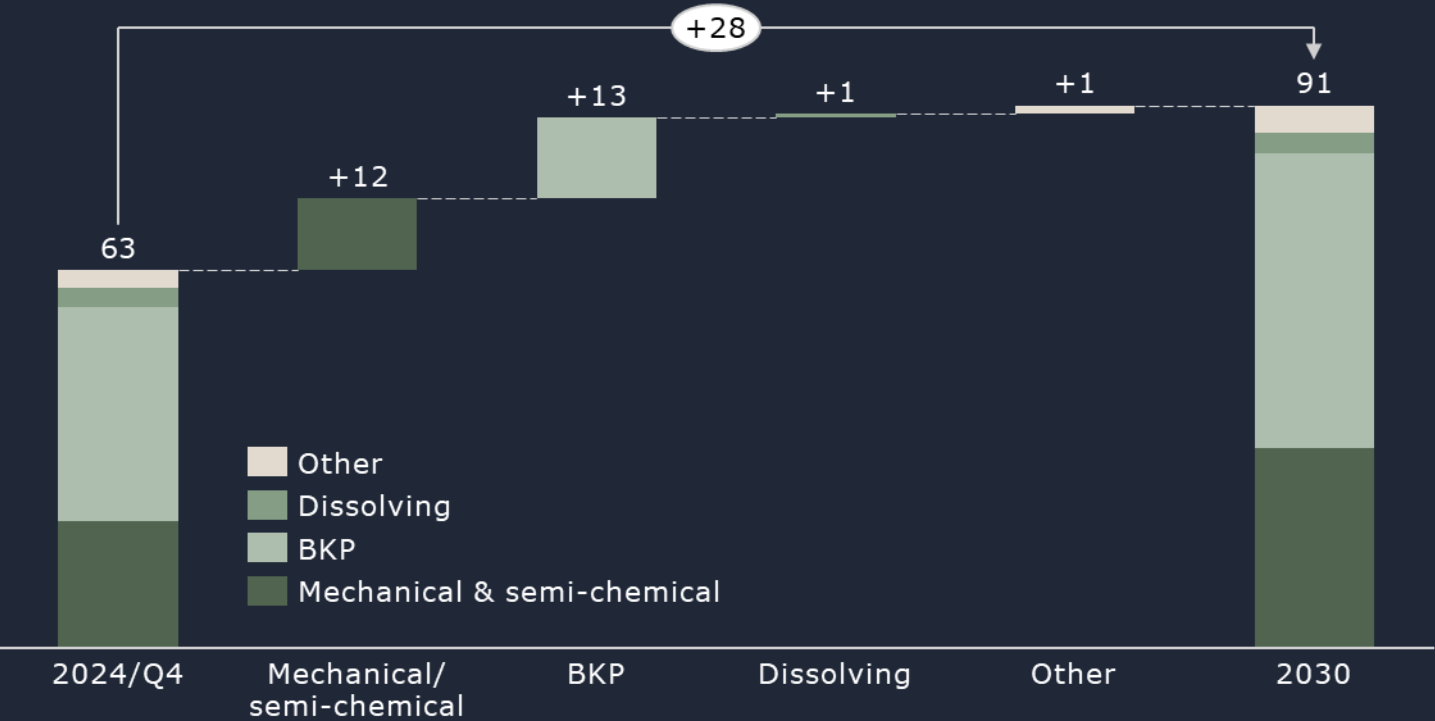


Source UN Comtrade, as reported by the exporting countries

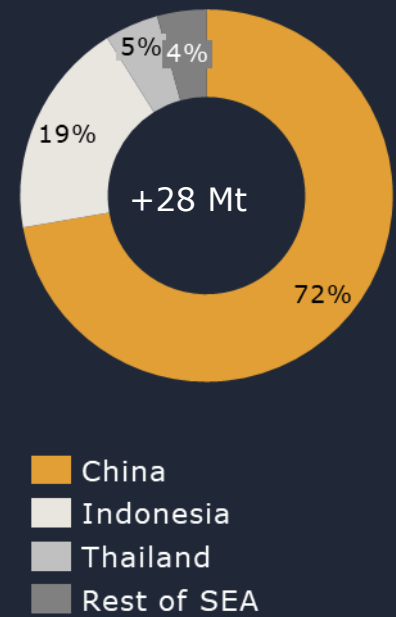
28 Mt project pipeline in SEA suggests that capacity expansions will only get more aggressive in the future

WOOD PULP PROJECT PIPELINE IN SOUTHEAST ASIA¹

Million tonnes



PROJECT PIPELINE FROM 2025/Q1¹

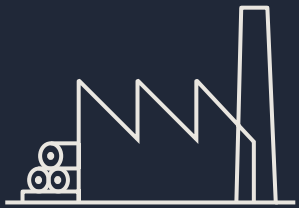


1. BKP includes fluff while other includes UKP and sulphite. Project pipeline includes projects completed in Q1/2025 as well as decided, planned and intended projects. SEA includes Bangladesh, Bhutan, Brunei, Cambodia, China, India, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Nepal, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Timor-Leste and Vietnam.

Besides pulp and electricity, future mills will generate revenues from other value-adding bio-based products

YESTERDAY

ONE PRODUCT
Purchased power
One mill | One player



TODAY

ONE PRODUCT
Max power sales
One mill | Few players



TOMORROW

MANY PRODUCTS
Side stream products
Industrial cluster | Many players



Biochemicals
Biofuels
Lignin products
Biochar & technical carbons
Novel textile fibres

Agenda Overview



CONCLUSIONS



RESILIENT SUPPLY CHAINS / INTEGRATION



OPERATIONAL EFFICIENCY IMPROVEMENTS



PRODUCT DIVERSIFICATION



SUSTAINABLE PRACTICES



THANK YOU FOR LISTENING!

Making Future

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AFRY

AFRY in brief

AFRY provides advisory, engineering, design and digital services to accelerate the transition towards a sustainable society.



We are

18,000

devoted employees
creating impact for
generations to come.

Projects in
more than

100

countries

We speak
more than

50

languages

AFRY holds 14 core segments. One of the key management consulting focus areas being within the pulp, paper and packaging industry

Management Consulting >>

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Mining & Metals
Hydro
Nuclear
Thermal
Renewables & Energy Storage
Transmission & Distribution
Life Science
Food
Biorefining & Chemicals
Automotive & Other Industries
Road & Rail
Public & Commercial Places





MARKET SIZE & OUTLOOK

BY REGION AND
PRODUCTS



PRODUCERS & MACHINERY PROVIDERS

PRODUCERS BY
SEGMENT

TECHNOLOGICAL
OFFERING



TRENDS, DRIVERS & REGULATION

REGIONAL
REGULATIONS

BRAND OWNER
INITIATIVES



MANUFACTURING & INVESTMENT COSTS

FOR TAILORED
PRODUCTS AND
TECHNOLOGIES

CAPEX



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