



Global fibre markets

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HAWKINS WRIGHT

Agenda



About Hawkins Wright

1. The big picture

- World paper and board market review and outlook

2. Outlook for fibre demand

- End-use markets for market pulp>tissue markets
- The importance of China

3. Outlook for demand and supply

4. Price drivers: Pulp production costs

5. Pulpwood Supply

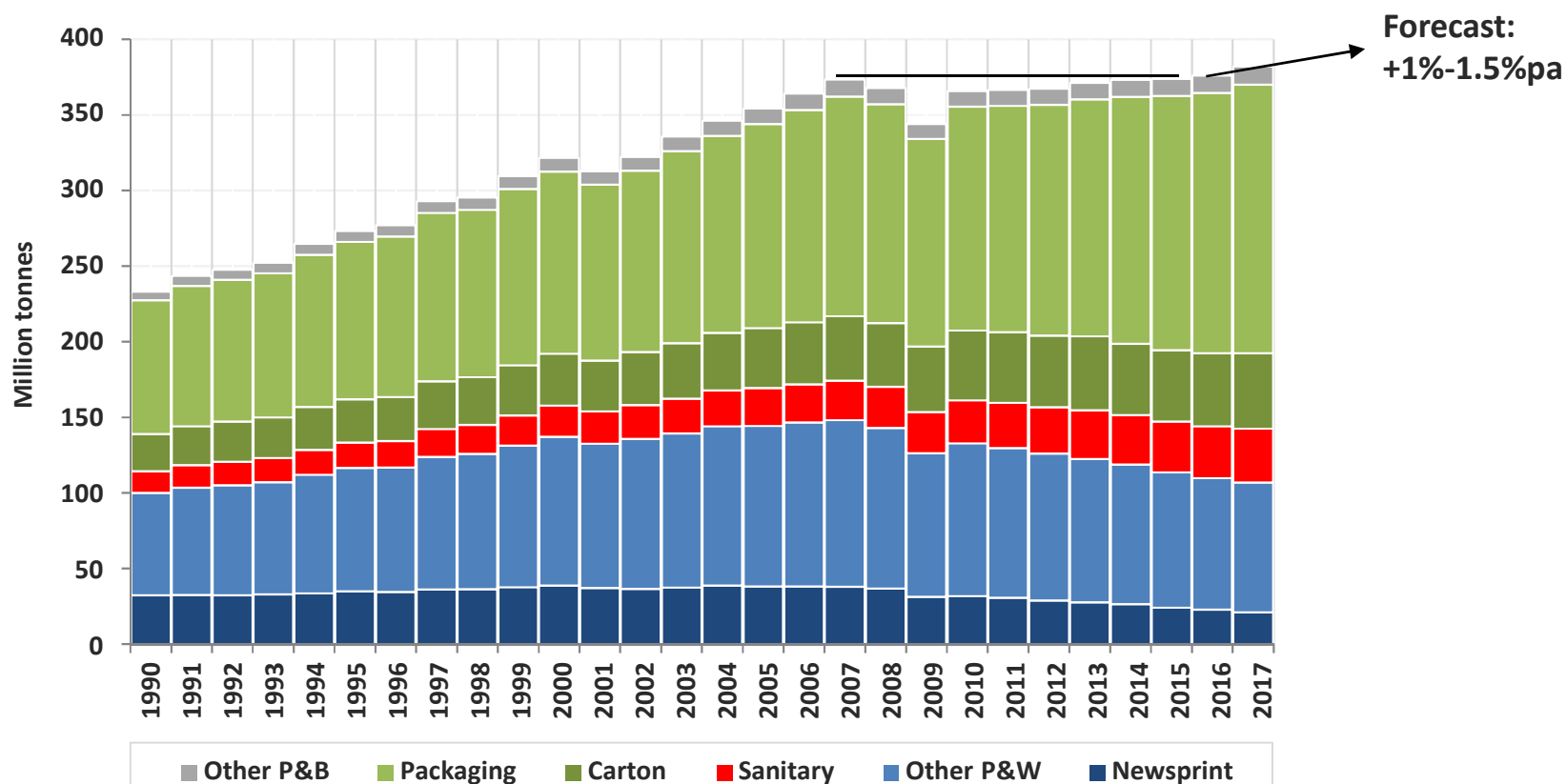
6. Conclusions

All data sourced from Hawkins Wright multi-client reports:

- Outlook service for market pulp
- Defining the China market for pulp, paper and board
- Outlook service for dissolving pulp
- Pulpwatch
- Pulpwood supply in Asia

Paper and board market overview World

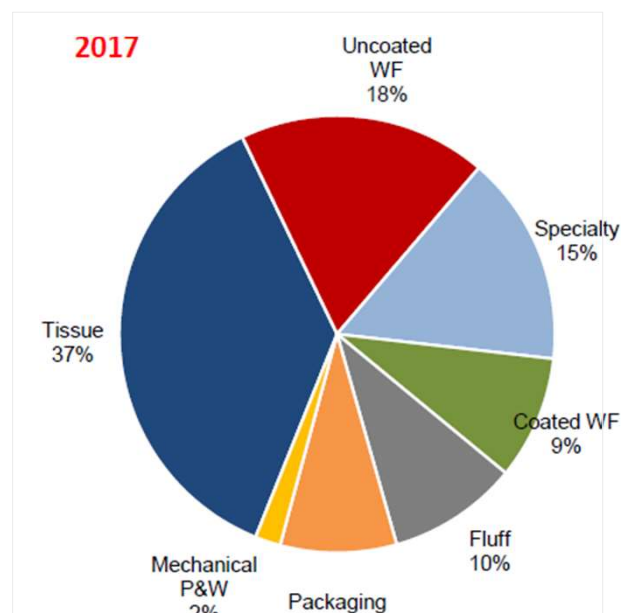
P&B production forecast



Source: Hawkins Wright Estimates

Note: uses Hawkins Wright estimates for China – NOT the Chinese official data

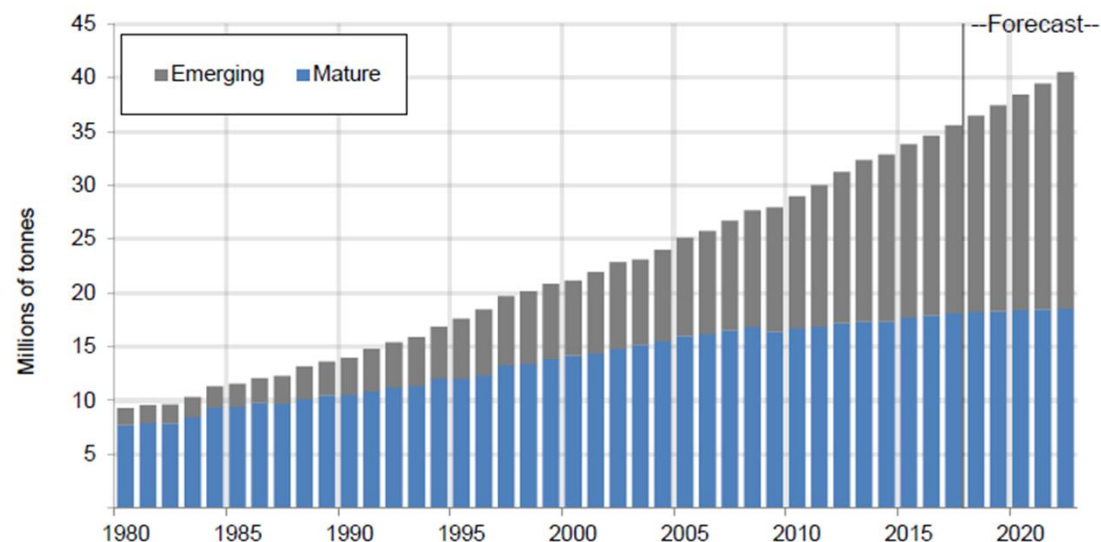
Market pulp demand by end-use Key driver of growth: tissue



Source: Hawkins Wright

- In 2017, tissue accounted for 37% of all deliveries of bleached chemical market pulp. This compares with just 27% in 2010.
- By 2022, the tissue sector is forecast to account for 41% of all deliveries.

Global tissue production in the mature and emerging markets



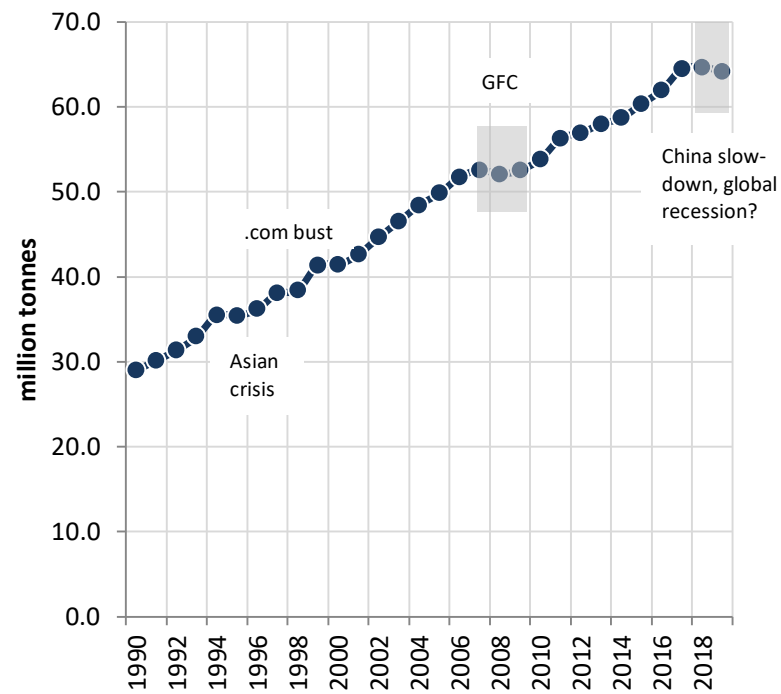
Source: Hawkins Wright

Note: mature markets include North America, Western Europe, Japan and Oceania. Emerging markets include Latin America, Africa, East Europe and Asia

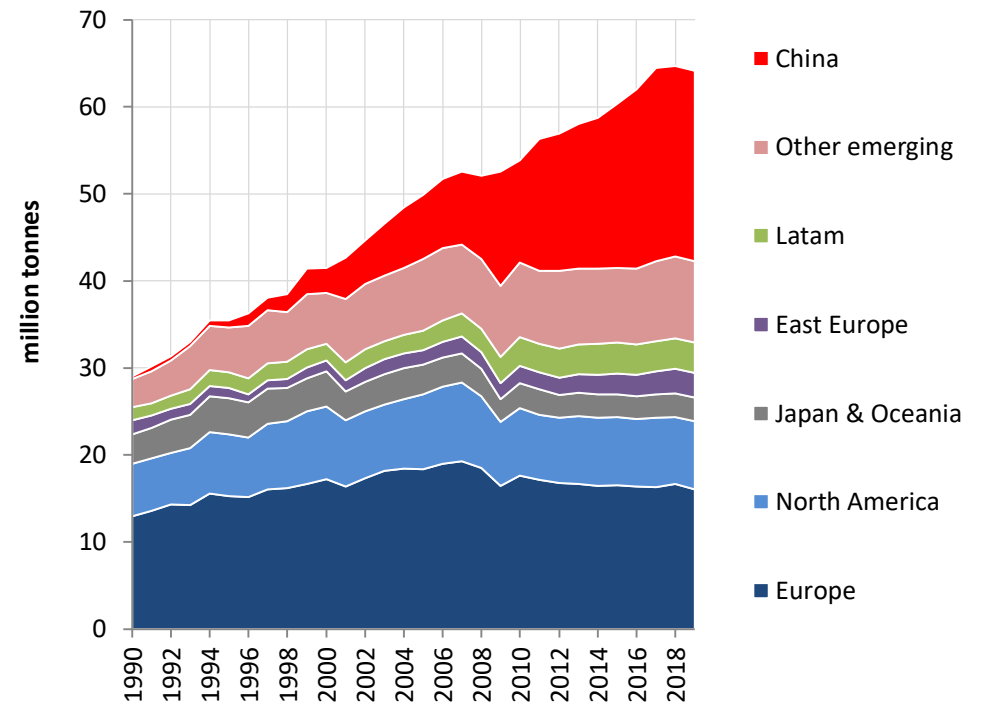
Market pulp shipments



Total market demand, 1990-2019



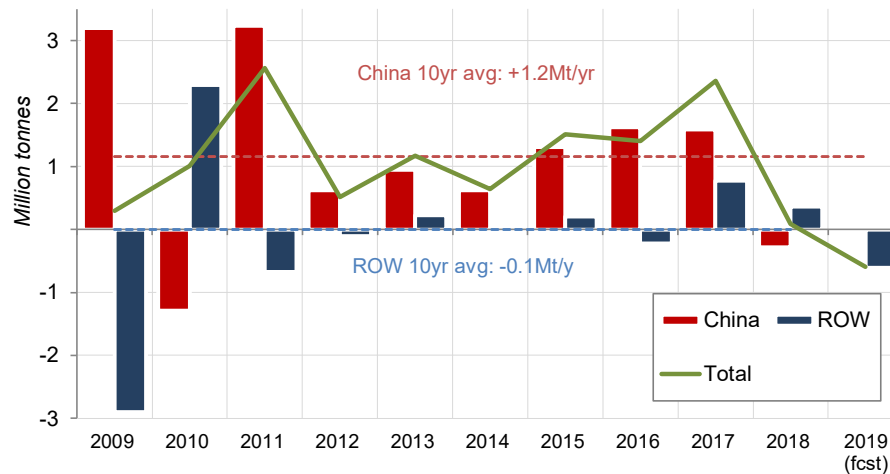
Total market demand, by region 1990-2019



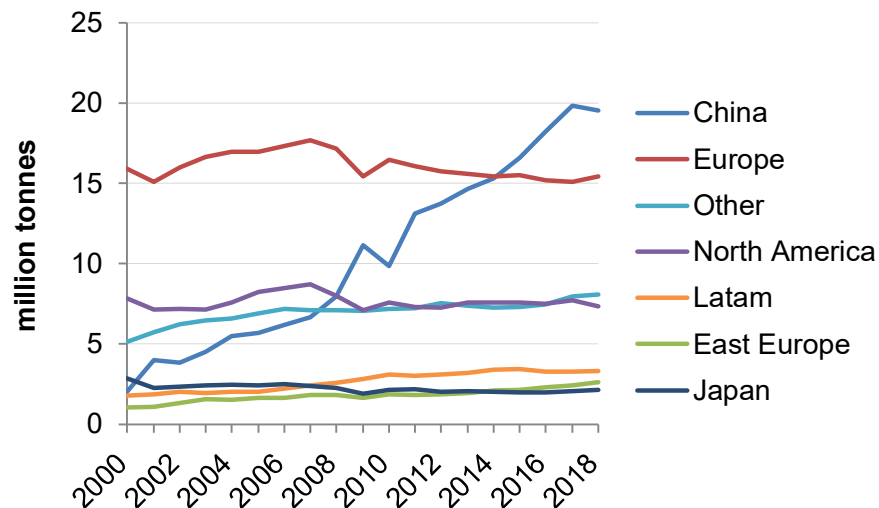
Market pulp demand dependent on China



Year on year growth in market pulp demand, China v ROW



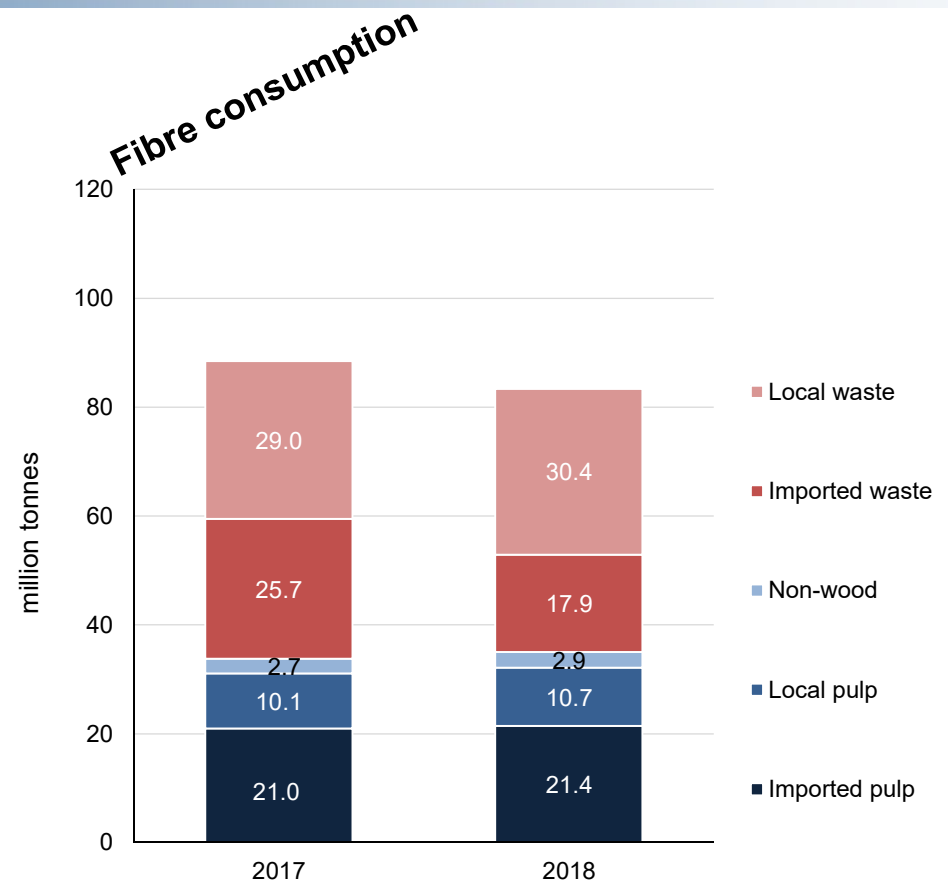
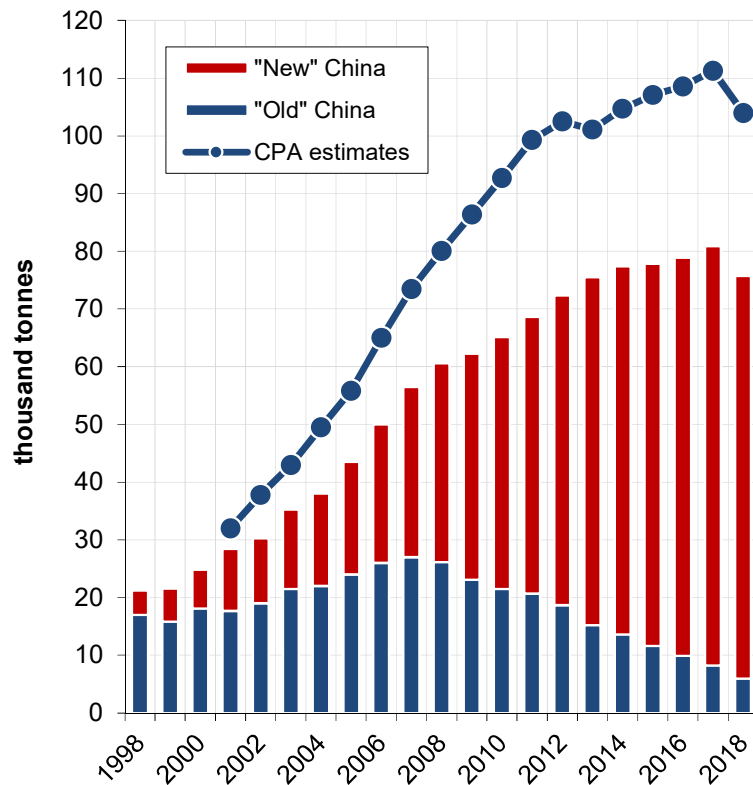
- 2017 was unusual in that both China and ROW performed well
 - Record paper production
 - Low pulp price, restocking
- 2018 was flat
 - Economies slowed
 - High pulp price chokes-off demand
- This year, unlike 2009, China is not able to offset ROW, despite collapse in prices



A crossroads for the Chinese paper industry?



Paper & board production

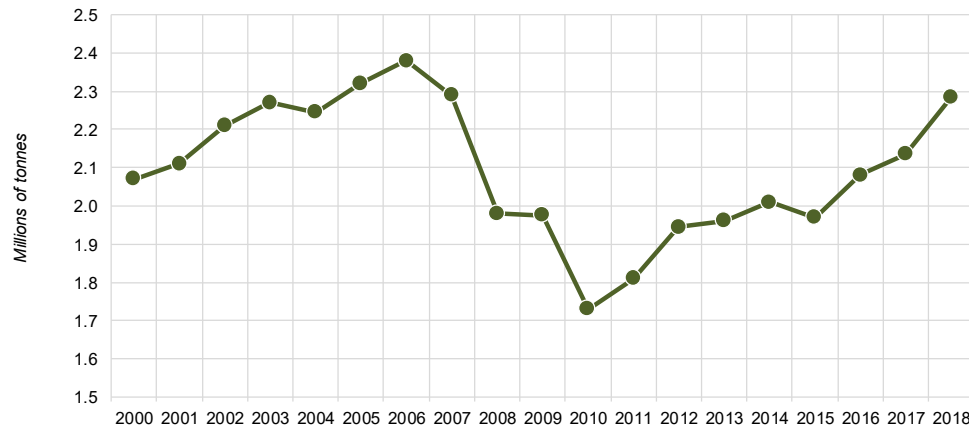


**Imported RCF will fall to 11Mt in 2019,
and zero by 2021?**

The reduction in Chinese RCF imports has spurred *some* additional import demand

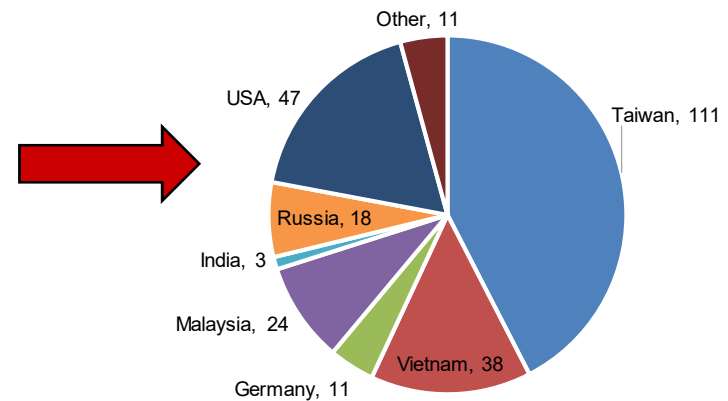
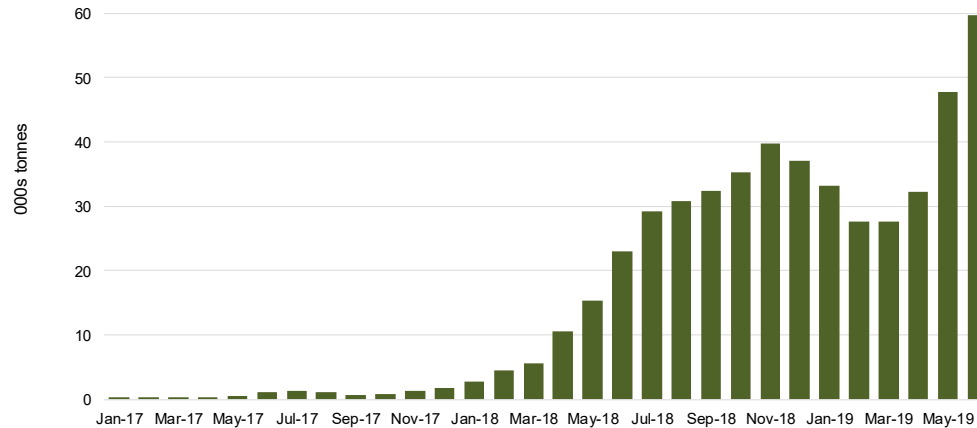


Unbleached kraft pulp shipments



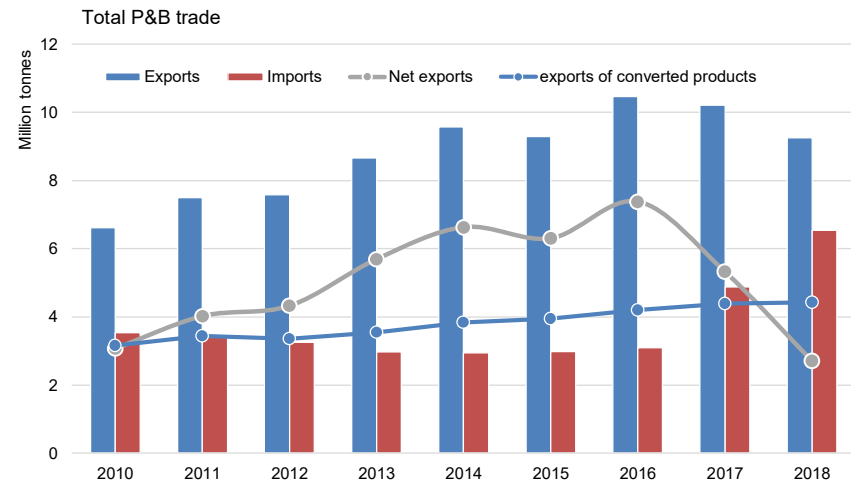
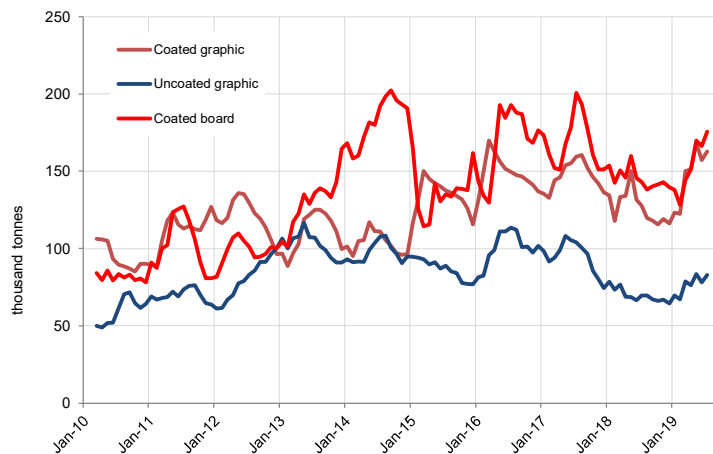
- Linerboard mills have increased % of **UKP** due to lack of recycled
- Nine Dragons, Lee & Man, Long Chen **process OCC** in Taiwan, Vietnam, Malaysia, Myanmar and tranship to mills in China
- Chinese also invest in USA (Fairmont, Wickliffe, Biron, etc)
- And build more pulp capacity in China (Sun Paper)

Imports of processed OCC



China's exports of P&B have peaked

- But still linked to pulp prices

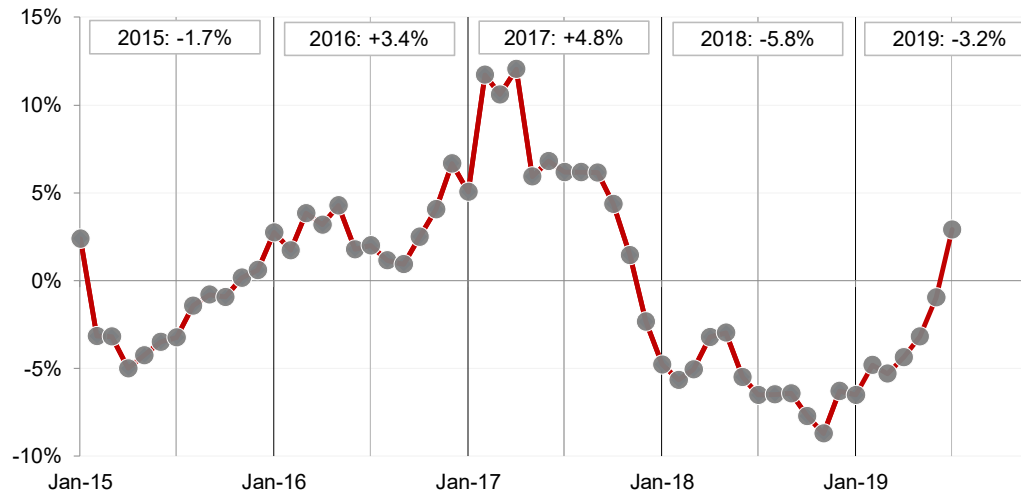




But the main impact has been to reduce P&B output

Total P&B output, according to official statistics

Chinese output of machine made paper and board
Y-o-y % change (3 month moving average)



Source: National Bureau of Stats

- In addition to lack of feedstock, the contraction in output also results from the price-inventory cycle, the ailing export sector, and the slowing domestic economy



Summary review

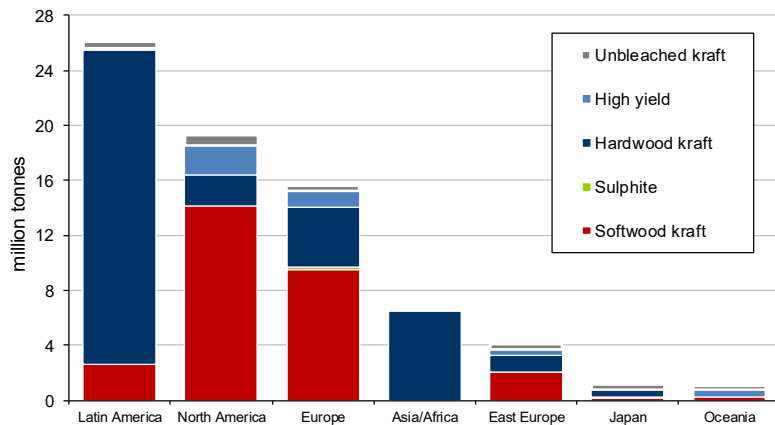
- Growth in Chinese pulp demand through 2016 and 2017 was not the result of acceleration in paper demand growth
- Nor was it related to the recycled fibre import restrictions announced in July 2017, and implemented from January 2018
- Rather,
 - low pulp prices through 2016 spurred P&B exports and encouraged fibre substitution, and
 - supply side reforms led to a massive inventory cycle through the paper supply chain
- High pulp prices through 2018 had opposite effect, and have combined with unwinding of the inventory cycle and economic slow-down to cause a contraction in pulp demand over the past 18 months



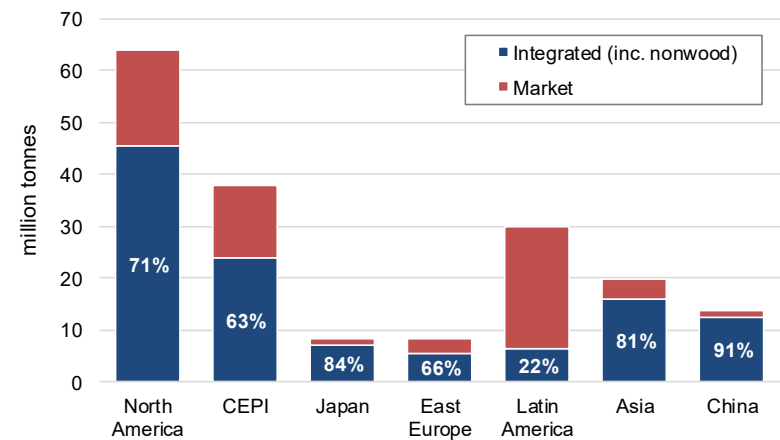
Global pulp capacity summary

- Market pulp capacity is estimated at 73.8Mt/y. There is an additional 7.5Mt/y dissolving pulp capacity of which around 1.5Mt/y can swing to kraft
- Integrated wood pulp production is estimated at 117Mt/y.
- Latin America has become the dominant market pulp supplier, but remains lower than North America and Europe in terms of total production

Market pulp capacity, by grade and region (2019)



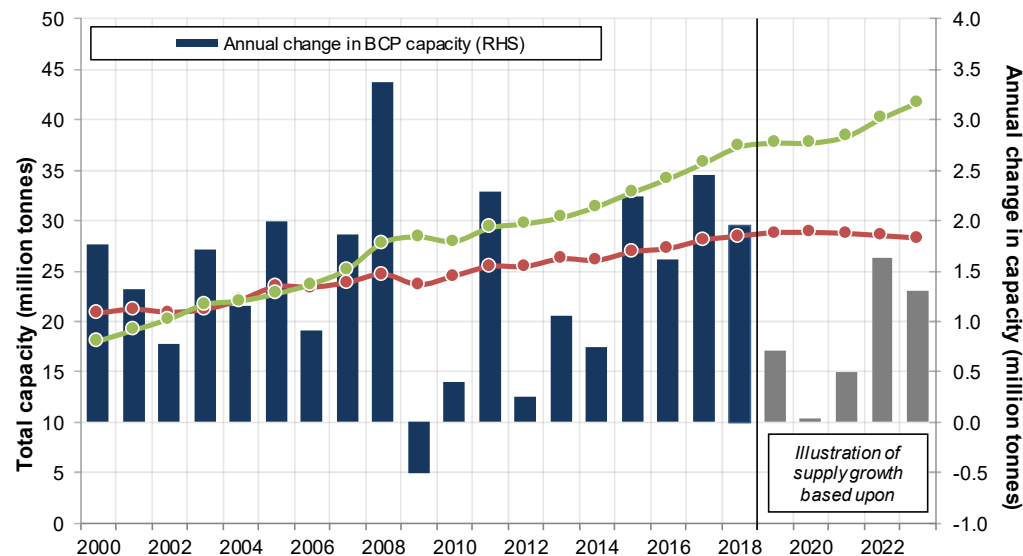
Regional pulp production, market v integrated



Market pulp capacity growth



- The pace of investment inevitably slows from 2019, the previously anticipated surplus is now revealed, and will take a year or so to work through.
- Closures are almost certain now, but where? And when??



Source: Hawkins Wright

- Meanwhile, new projects have been approved for 2021 and beyond: Arauco MAPA, UPM Paso de los Toros, Bracell/Lwarcel, Ence Navia
- A number of unconfirmed projects in Finland and Russia, but based on current plans softwood capacity is set to contract
 - Subject to dis-integration of North American and European industry



Capacity disruption & closures

Short-term disruptions:

- Unforeseen production losses have been variously estimated at 1-1.4 million tonnes in 2017 and 1.5-2 million tonnes in 2018. (It's around 2 percentage points on capacity of 74Mt/y)
 - Weather
 - Mechanical failure & maintenance
 - Fibre
 - Permits
 - Politics
- Some of these issues are likely to recur, particularly bearing in mind the ageing asset base. But how to model/forecast?

Permanent closures:

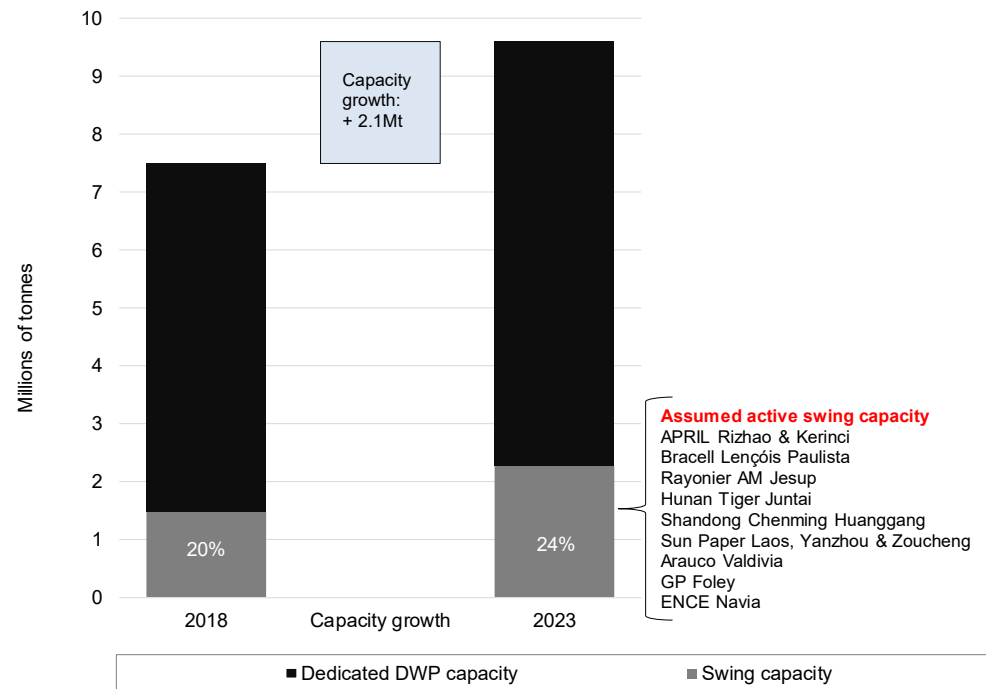
- Also impossible to forecast
- Since 2013, mill or line closures have taken place at Tofte*, Solombala, Cel du Maroq*, Huelva*, Old Town, Wyckliffe, Jay, Plymouth, Kamloops
 - On average, lines are less than 200,000t/y
 - Old Town and Wickliffe have been acquired by Chinese and restarted, on unbleached

**used imported wood chips to varying degrees*



Dissolving pulp & swing capacity

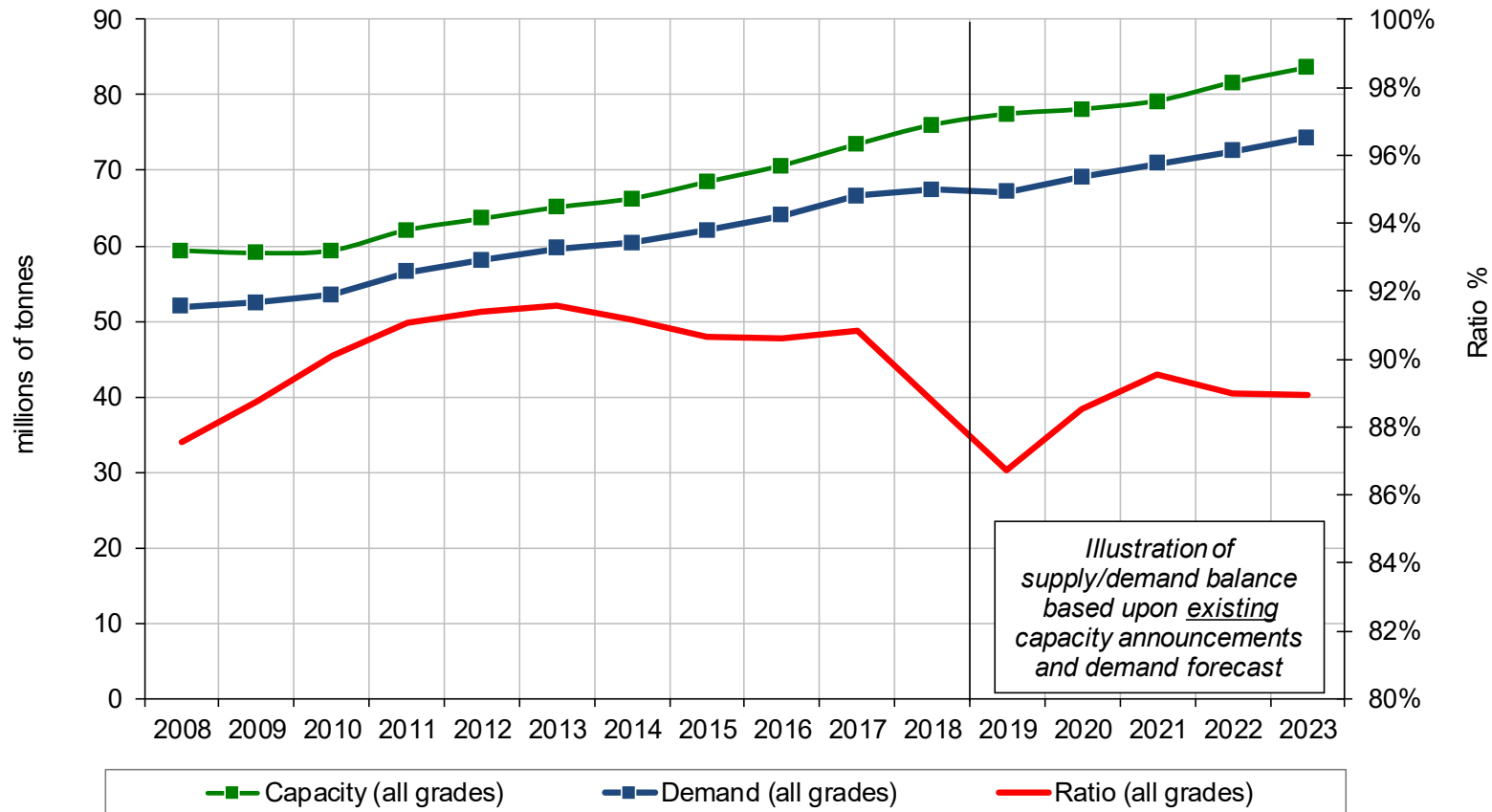
- Another variable to consider...



- BHKP/BSKP, Fluuff/BSKP/DWP, BSKP/UKP

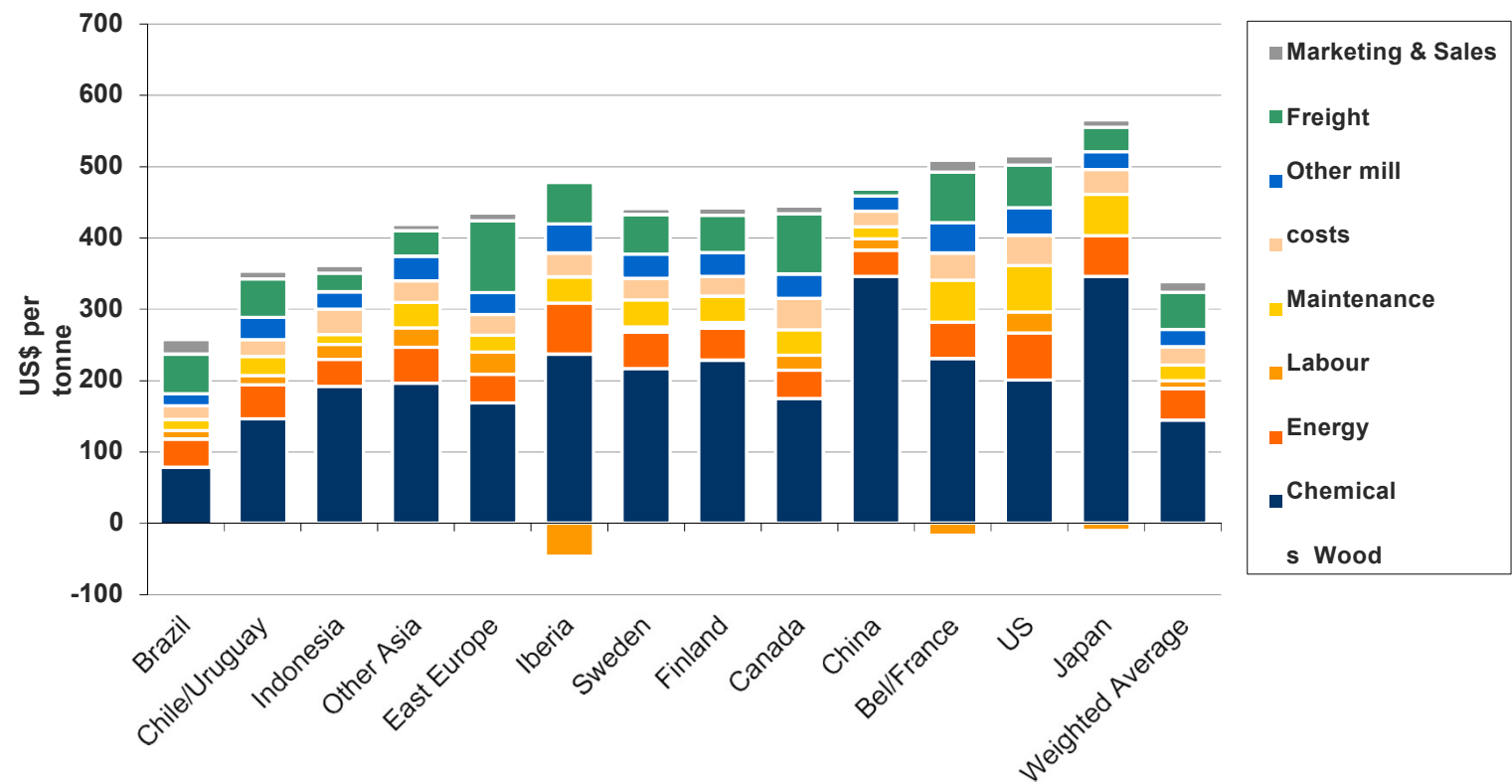
Supply and demand

All grades of market pulp: DWP, BCP, UKP



Source: Hawkins Wright

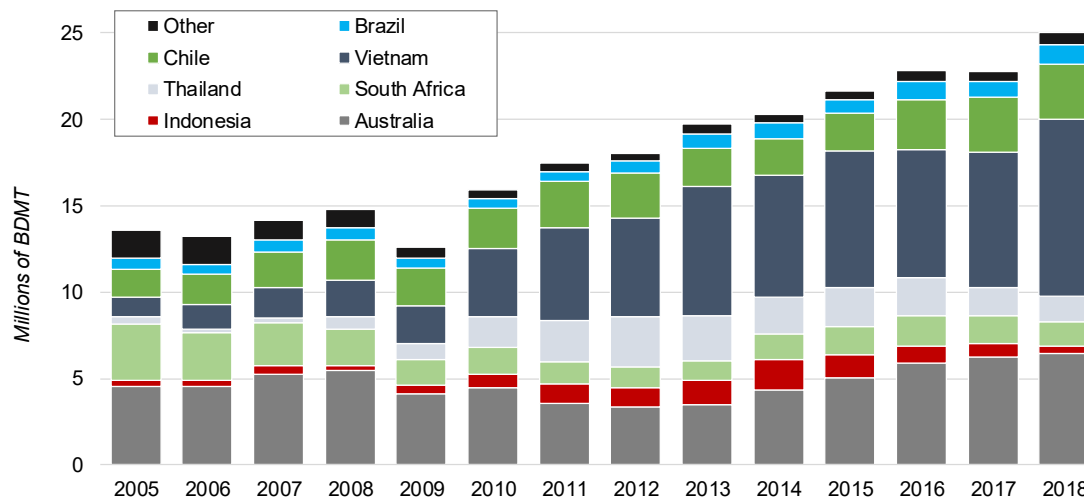
BHKP costs, CIF China (Q4-2018)



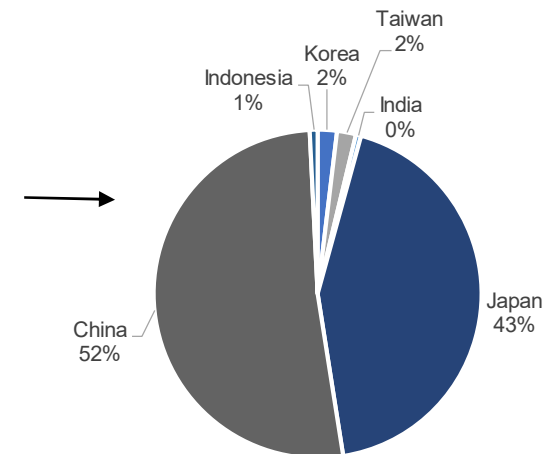
Source: Hawkins Wright

South East Asian woodchip supply

By country of origin, 2005-2018



Demand by country, 2018

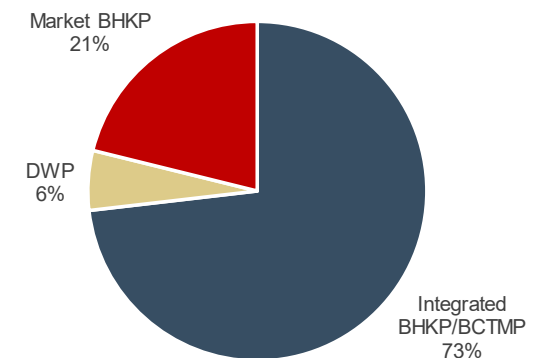


Source: Hawkins Wright

Key near-term risks:

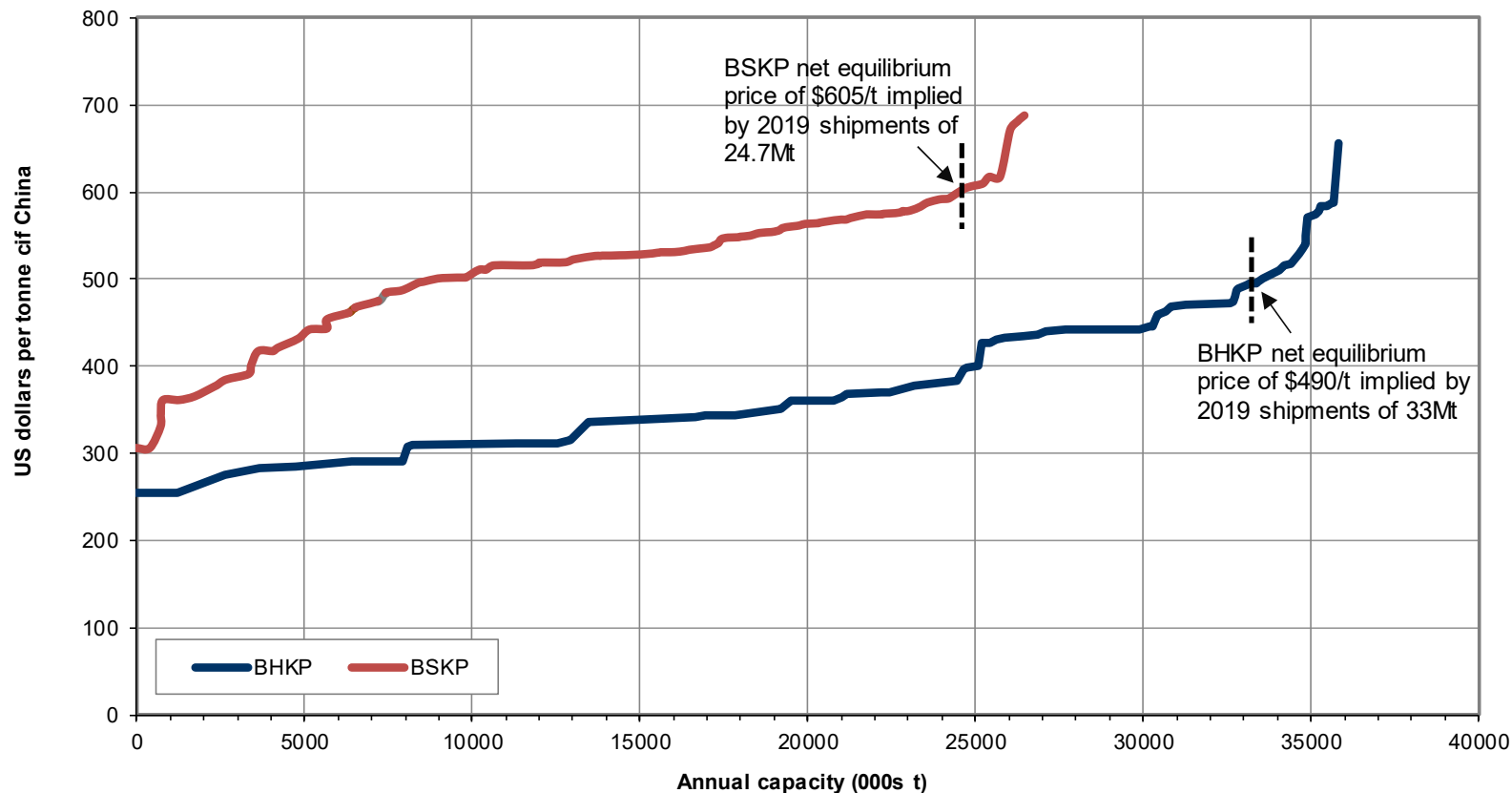
- Australian supply
- Indonesian supply and demand

Demand by end-use, 2018



Source: Hawkins Wright

Net equilibrium price, CIF China BSKP and BHKP

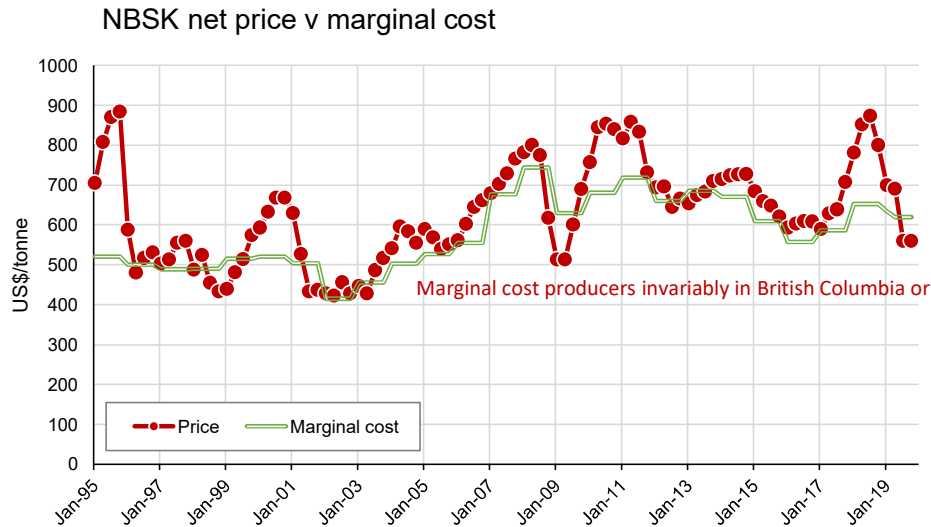


Source: Hawkins Wright

- High costs mills proving very resilient, owing to their multiple obligations with their stakeholders: customers, chips suppliers, local government.
- Unlike in previous cycles, the impact of any closure of non-wood pulp mills will be limited as the majority were permanently closed in 2015/16.

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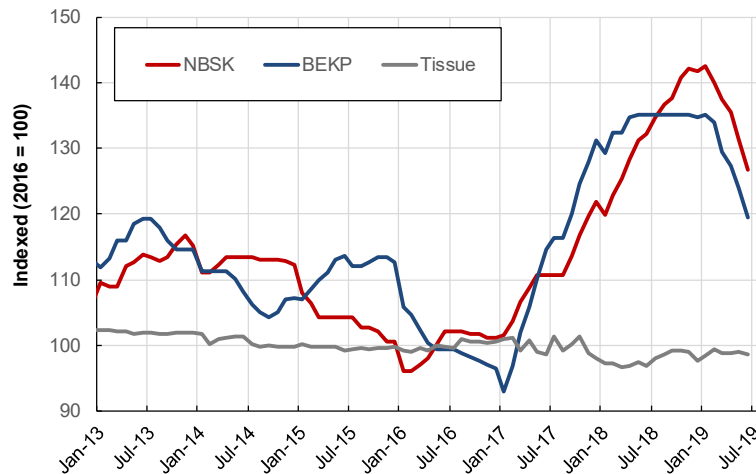
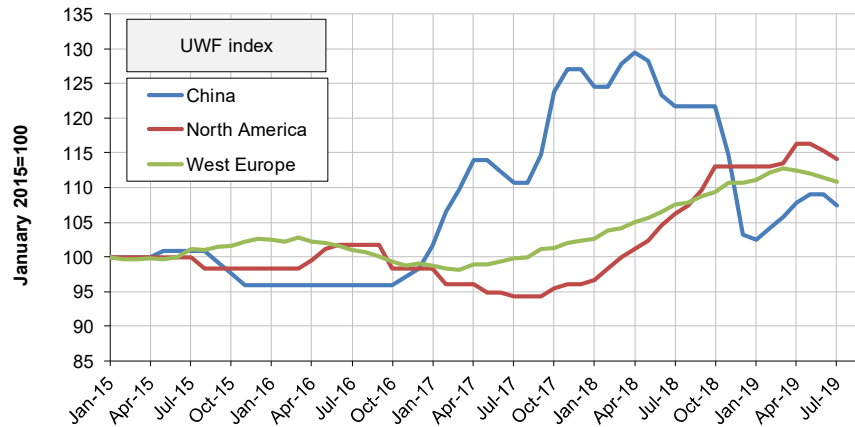
In *theory* we are very close to the bottom in China



- But macro- drivers are presenting headwinds, with more tariffs proposed, and renminbi breaking through key threshold level for first time since crisis
- Signs of curtailment becoming more visible, most obviously from Suzano but also some others, not all public
- Wood chip import demand to China is falling. However, lower prices for Vietnamese chips threaten to lower the marginal cost level...
- Some marginal demand may return at current prices (substitution for RCF, DWP, non-wood etc)



Paper & tissue prices



- Higher paper prices in Europe and Europe have accelerated the contraction in demand
- Chinese prices will not recover to 2017-18 levels
- Machine conversions from P&W in all regions...varying impacts to pulp demand
- Tissue remains the key growth sector, but over-capacity, and supply chains bring different challenges



Longer-term outlook

- Underlying demand for many virgin fibre products remains positive
 - tissue & hygiene, renewable packaging, specialties & viscose
- But global P&B demand is fairly flat, and price sensitivity of pulp (and paper) should not be under-estimated.
 - Paper production will always migrate to the lowest cost areas – non-integrated mills must be able to compete
 - China's export sector suffering, can momentum in domestic consumption be maintained? A new phase is underway...
- Costs are rising (though geared to FX) and many areas of pulp supply remain vulnerable
 - Fibre shortages are real, assets are ageing
 - few genuinely low cost locations for new pulp projects, the current market downturn could discourage/delay projects further
- Volatility is here to stay

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