

The outlook for pulpwood supply & demand in the Asian Pacific Rim

A multi-client proposal; available now - June 2023





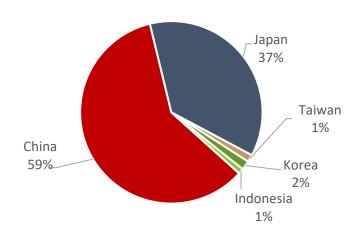
Asia-Pacific wood chip overview

Global seaborne chip trade was 31 million BDMT in 2022, of which 28.3 million was hardwood and 2.7 million was softwood.

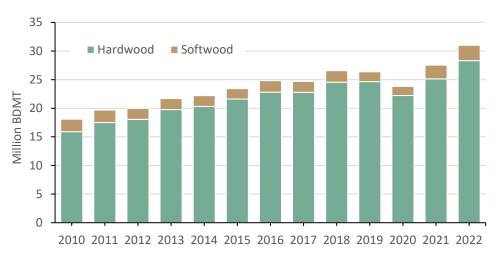
Around 92% of hardwood chips are used to make BHKP and HYP which is used in the manufacture of paper, board, and tissue products. Around 6% goes into DWP, which is used to make viscose staple fibre for textiles, whilst less than 2% is consumed by biomass power generators in Japan.

Softwood chips are shipped to Japan and China where they are used to make UKP and semi-chemical pulp for packaging board.

Chip imports to Asia, by country, 2022



Chip imports to Asia, 2010-2022



Data sources

Data has been sourced mostly from trade statistics, cross referencing import and export data. We have also used trade data as a guide to show price trends, cross-referenced with discussions with industry contacts.



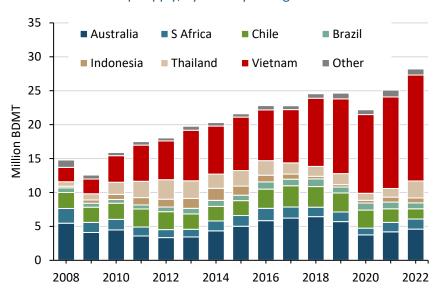
Market summary

Growth in the Asia-Pacific wood chip trade has been driven by investment in Chinese pulp capacity, which has far exceeded the domestic pulp wood availability. This investment has accelerated over the past three years, even as Chinese demand for paper and board has slowed. It is partly driven by the desire to replace recycled fibre following the import ban which was phased in over three years from 2018-20, removing over 25 million tonnes of feedstock to the Chinese industry. However, Chinese companies are also installing BHKP and BCTMP lines in an effort to capture the efficiencies of integrated pulp production and reduce exposure to the pulp cycle.

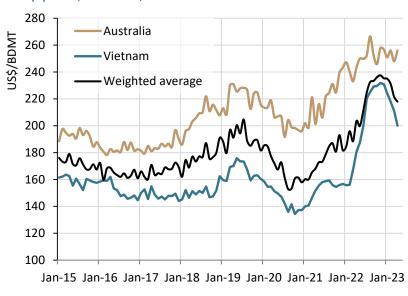
Most of the growth in Chinese wood chip demand has been satisfied by Vietnam and to a lesser extent Thailand, where farmers grow eucalyptus and acacia on short-rotations as a cash crop. Meanwhile, export availability from other established suppliers from more distant locations is in structural decline since 2017, for various reasons.

The emergence of China as the dominant chip consumer has introduced a great deal of volatility to the market, which has traditionally been a fairly stable and integrated supply-chain, dominated by Japanese players.

Asian hardwood chip supply, by country of origin 2008-2022



Chip prices, CIF China, 2015-2023





Need for this report

Some of the questions which the report will address:

- · Who are the main consumers of imported wood chips? What type of pulp and paper do they produce?
- What are the investment and pulp production trends in China? How much is unbleached, semi-chemical, or high yield aimed at replacing recycled fibre, and how much is BHKP which will compete more directly with imported market pulp? What is the status of the projects?
- How much fibre can Chinese companies realistically expect to source domestically? What are the drivers behind local wood supply?
- What are the chip demand trends in other Asian countries like Japan, Korea, Taiwan, Indonesia, and India? How are they impacted by the growth in Chinese demand?
- What are the pulp production and export trends in Indonesia?
- How is rising demand for Japanese biomass likely to impact the market?
- What is the short-term outlook for Vietnamese chip supply? What are the variables driving longer term export potential?
- Why have exports from traditional suppliers such as Australia, Chile, and South Africa declined? Will they continue to fall, stabilise, or recover?
- What are the factors driving wood chip prices, and what the reasons from the fluctuating price differentials between grades and suppliers? How to chip prices impact on Asian pulp production costs?
- What is the outlook for market pulp supply-demand and prices, and how will this influence wood chip demand?

This report is a strategic tool for **investors**, **producers**, **logistics providers**, and anyone wishing to understand a key part of the Asian pulp and paper supply-chain. For **wood chip suppliers**, it provides an understanding of the downstream sectors, and the various drivers which will influence demand and prices for wood chips over the next five years. For **market pulp producers** the report explains a key variable which influences the cost structure of the industry, and the extent to which integrated pulp production may impact on market pulp demand in future.



Report scope and subscription details

The 60 page report is now in its seventh year of publication. It is structured as follows:

- Market overview and trading matrices for softwood and hardwood.
- Hardwood chip **demand** by country (China, Japan, Korea, Taiwan, Indonesia, and India). Historical wood chip imports by origin, from 2005. Main chip consumers, detailing the location, capacity, pulp grade, capacity and degree of integration. Pulp production trends and new capacity plans.
- Hardwood chip **supply** by country (Vietnam, Australia, Thailand, Indonesia, South Africa, Brazil, Chile). A description of the plantation resource and roundwood harvest, by species and end use sector. Potential future export availability.
- Wood chip **price trends** and **drivers**. Impact on pulp production costs, differentiating between dissolving, kraft, high yield, integrated and market pulp.
- Outlook for chip **demand** and **supply**, based on plantation resource development, pulp production trends, and pulp & bioenergy market dynamics.
- Outlook for chip **prices**

The 2023 report is available now, for a price of **GBP3,250** and includes:

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Vietnam

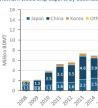
Vietnam is very much the local and low cost supplier to China, particularly for the southerly mills located in Hainan, Guangxi, and Guangdong.

Japanese mills have traditionally sourced high quality eucalyptus chips, often from their affiliated plantations in Australia, South Africa, or Chile. However, over the past ten years Vietnam has grown its market share from 10% to 45%, as Japanese companies have learned to benefit from the cost advantage. Similarly, Vietnam has replaced Australia as the preferred supplier to Korea over ten years ago.

Vietnamese supply is partly seasonal, with access to wood and yields partly dependent on the length and severity of the rainv season. Chips are exported

from 8-10 ports, which are relatively evenly Port capacity has been a constraining factor growth and high competition from other exp

Vietnam wood chip exports by destination



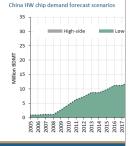
Page extracts

China: HW chip demand forecast

The forecasts below are derived from the pulp expansion projects listed in the table on page 18. The base-case assumes limited growth in domestic pulpwood supply, and that the majority of projects who have installed or already ordered the equipment from Valmet or Andritz

- Sun Paper ramps up the new HYP lines and DUMP line
- · Nine Dragons installs all of the 4.2 million some lines are expected to be dedicated
- · Projects of Lee & Man Jiangxi, Liansheng

The high-side forecast includes some of the more closely reflects our supply-side scenario



HW chip price forecast

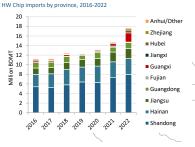
The nominal price scenario in the chart below is plotted against our BEKP pulp price forecast. Prices of both pulp and chips are currently on an upwards trend due to supply-chain delays and bottlenecks and cost inflation. However, Chinese paper and board prices are not keeping pace because of acute over-capacity, and a slowing domestic economy brought about by the zero-tolerance Covid-19 policy. It is not clear when (or how) China will emerge from the lock-downs which are affecting many of the large urban areas. It is widely expected that the government will prioritise economic stability through various stimulus mechanisms, but the growing debt burden and other structural headwinds will limit this potential.

We expect pulp prices will undergo a correction acceleration of market pulp capacity growth, and an a higher floor than in the past, and from 2024 we ex Chip prices are expected to rise relative to pulp pri increased efficiencies. However, over-capacity of a position continues to deteriorate.

Hardwood chip prices, CIF China, from Australia and



China: HW chip imports by province, mill locations



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The four shaded provinces (Shandong, Hainan, Jiangsu and Guangdong) accounted for 90-95% of hardwood chip imports over the past five years. We have also shaded Guangxi as we expect chip imports will rise substantially over the next 2-3 years.

Inland locations such as Chongqing, Wuhan and Yanzhou receive imported chips, but the additional cost of inland transportation is

Red dots denote installed capacities, green dots are currently under construction (next page).





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