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Turning a New Page

China's Impact on Global Paper Packaging

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Summary

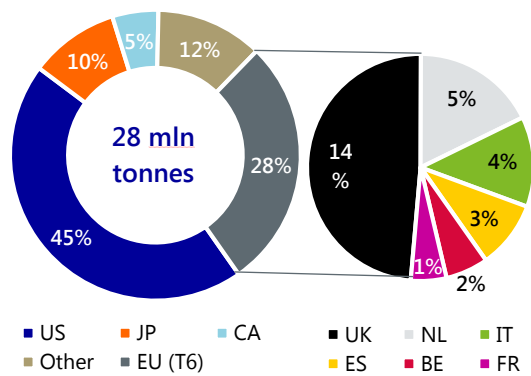
- From 2013 onwards, China's government has been implementing its long-term strategy to strengthen its waste quality policies. The potential effect of these policies on the global paper packaging supply chain is high. How China will move forward with its policies is however somewhat uncertain. We evaluate two potential scenarios, depending on the policy strictness: freezing today's new policy or reverting to the initially planned stricter policy.
- Non-exporters of recovered paper (RCP), like Brazil, are hardly affected by this policy change, while the US and Europe – the largest RCP exporters to China – do suffer. These countries are facing a large domestic RCP oversupply and significant price declines for old corrugated containers (OCC) and mixed paper. On the other hand, margins of producers of containerboard, corrugated paper and boxes are positively affected as the price of these products remain high.
- Dealing with the RCP oversupply, however, requires new thinking from the EU and the US. In the longer term, substantial investment in innovative 'quality' recycling infrastructure is a necessary step.
- Increasing RCP exports to new markets, such as India and South-East Asia, is an opportunity for the US and Europe, albeit a limited one due to process capacity constraints. In the longer term, increased exports to this region might result in growth in containerboard imports from the region into China, also driving international companies (including Chinese ones) to set up new mills in the region.

Plenty at stake for regional RCP exporters

From 2013 onwards, the Chinese government has been implementing its long-term strategy to strengthen its waste quality legislation. As part of this strategy, China recently banned mixed paper imports and imposed a 0.5 percent contamination limit for all RCP imports, effective from 31 December 2017 and 1 March 2018, respectively. On top of this, sudden additional notices might be issued. [On 3 May 2017, for example, the Chinese authorities 'surprisingly' announced 100 percent inspections on all RCP imports from the US between 4 May and 4 June.](#)

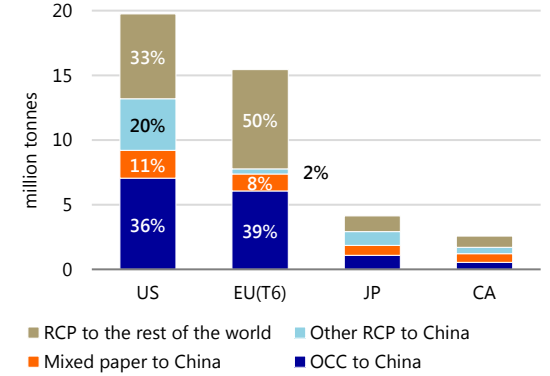
These policies have [a significant impact on the paper packaging industry, both inside and outside of China](#), for two reasons. First, China's paper packaging industry relies heavily on recycled fibre/RCP, of which a large share needs to be imported – about 95 percent of China's containerboard production is based on recycled fibre. Second, other regions, especially the US and Europe, depend largely on China as a buyer of RCP (see *Figures 1 and 2*).

Figure 1: RCP exports to China by country, 2016



Note: EU(T6) consist of top 6 exporters of RCP to China, including UK, NL, IT, ES, BE, and FR.
Source: RISI, Rabobank 2018

Figure 2: Top exporters to China by RCP grade, 2016



Note: EU(T6) consist of top 6 exporters of RCP to China, including UK, NL, IT, ES, BE, and FR.
Source: RISI, Eurostat, Rabobank 2018

The key question is what the temporary and structural effects of China's new RCP policies might be on the global paper packaging markets and for each stage of the supply chain, from pulp and RCP suppliers to paper packaging producers.

Scenarios: The future of China's policies

To assess the impact of China's policies on the global paper packaging industry, it is essential to develop a view as to how China will continue to follow its new waste import strategy. We don't think China will loosen its strict 0.5% contamination level or lift the mixed paper import ban. However, it is still unclear whether the strategy will remain as strict as it currently is, or become even stricter – for example by introducing the initially planned 0.3 percent contamination limits. There is also some uncertainty as to how these contamination limits will be detected and managed in China, allowing for potential inconsistencies in customs inspections. Besides that, a potential further cut in the RCP import quota is an essential yet uncertain element. All of these uncertainties would affect the size of the potential RCP import supply gap. Consequently, we investigate two possible scenarios regarding how China might proceed with its policy (see Figure 3).

Figure 3: Scenarios for China's future RCP import policy



* Note: For estimations of a potential OCC import supply gap, as the most relevant allowed RCP grade for the paper packaging industry, see our recent report '[China's Changing Paper Trail: The Impact of China's New Import Policy on the Domestic Paper Packaging Industry](#)'.
Source: Rabobank 2018

Below, we assess the impact of these scenarios on the paper packaging supply chain in four regions.

The impact varies by region

Marginal impact on Brazil

Brazilian imports of OCC might rise marginally

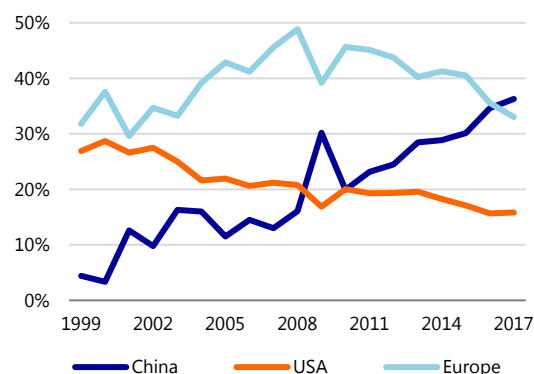
Brazil is not a relevant importer or exporter of RCP, including OCC. As a result, international prices of these materials have a limited effect on domestic market dynamics in both scenarios. Brazil has been largely self-sufficient, with limited need for imports and no surpluses for exporting. Imports from North America and other countries into Brazil have also been limited due to market barriers, such as high import tariffs (16 percent or more, dependent on the material), quality requirements that are usually higher than what is traded, and freight costs.

Nonetheless, the Brazilian economy is on a path to recovery, and demand for corrugated board is accelerating (4 percent volume growth expected in 2018). About 60 percent of Brazil's containerboard production is based on recycled fibre. Recycled containerboard producers in Brazil will therefore be looking at securing more feedstock in order to prevent a spike in prices such as the one seen back in 2016. Back then, the domestic supply of OCC shrank as a result of lower packaging demand because of a deep recession, and margins for corrugators suffered. If international prices of OCC are sufficiently low as a result of the Chinese policies, there might be opportunities for some increases in imports of OCC into Brazil. However, it is likely that North American low-quality OCC might find its way into other markets first due to Brazil's significant barriers to entry. Also, Brazilian players generally prefer higher quality OCC grades. Therefore the potential increase of imported OCC is expected to remain limited, regardless of the different potential scenarios considered.

High global pulp prices favour Brazil

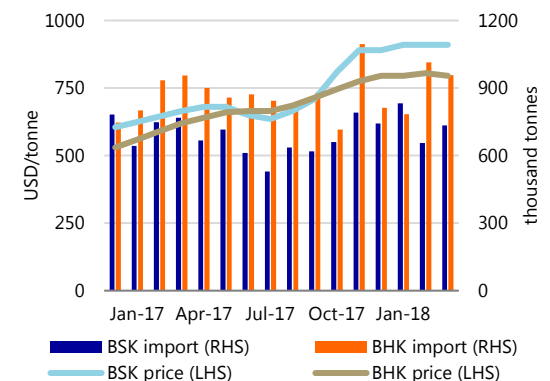
Chinese imports of bleached hardwood kraft pulp (BHK) from Brazil have grown steadily and are now approaching 5m tonnes annually, nearly a third of Brazilian production. China is currently the largest importer of Brazilian BHK, surpassing the EU and the US (see Figure 4).

Figure 4: Brazilian BHK pulp exports by destination, 1999-2017



Source: Secex, Rabobank 2018

Figure 5: Chinese BSK and BHK import volumes and prices, Jan 2017-Jan 2018



Source: RISI, Rabobank 2018

China's demand for imported BHK pulp originates from a booming tissue market and some growth in kraftliners and paper grades. Chinese recycled containerboard producers will only substitute imported OCC with more expensive imported pulp in specific situations and due to technological barriers, as costs would otherwise increase very significantly. Q1 2018 imports for BSK were up 3 percent on Q1 2017 levels and BHK imports were up 2 percent on Q1 2017. This

shows a continuation of the growth trend rather than an abrupt jump following the new Chinese policy (see *Figure 5*). Strong pulp demand from China will continue, fuelled by economic growth and rising demand for tissue, some paper grades, and packaging in general. This will help pulp prices remain at historically high levels, especially as global pulp supply growth is limited and there are no new large capacities on the horizon for 2018-2019, for both BSK and BHK.

Higher pulp prices could have a negative impact for some domestic pulp offtakers in Brazil, such as containerboard and folding carton producers who would pay more for pulp locally – as pulp producers are likely to prioritise the export market, particularly China, due to higher prices. Overall, Brazil benefits significantly from more BHK exports at high prices to China. The trend of high pulp prices will not be significantly affected by the considered scenarios, as demand for pulp responds primarily to demand growth of product lines that will be less impacted by changes in policies.

North America will suffer the most

Significant financial losses in the US

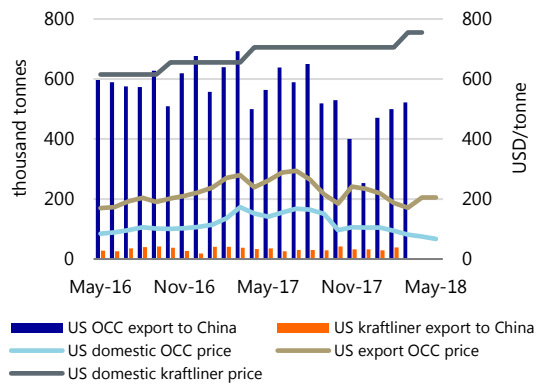
The US containerboard market is strategically positioned for virgin fibres (65 percent of production), with backwards integration of large producers in pulp production. One-third of RCP collected in the US is exported, and China accounted for about 70 percent of these exports (amounting to 13.2m tonnes) in 2016. Of these exports to China, more than half consisted of OCC (7.05m tonnes) (see *Figures 1 and 2*).

OCC exports to China were stable in recent years. Yet, since the implementation of the new policy, inspection of US OCC shipment has gradually tightened to 100%. The inflow of US OCC into China has significantly declined and has even been suspended for a month, starting 4 May 2018. This drove the domestic OCC price down by 60 percent and the export price down by 30 percent between the peak of July 2017 and May 2018 (see *Figure 6*). We expect the domestic OCC price to further decline given China's close scrutiny towards the US. Assuming that the US maintains a 45 percent import share (see *Figure 1*), OCC imports from the US could drop by more than 50 percent to 1.4m to 2.9m tonnes to 1.8m to 3.7m tonnes under 'hard line' and 'current line' scenarios. This translates on average to USD 1.2bn to 1.0bn of financial loss, respectively, at an annual average export price of USD 234/tonne. Combined with the 60 percent loss in domestic OCC price, the negative financial impact could reach USD 4bn in 2018.

To solve this dramatic oversupply, OCC exporters could further develop new export markets, such as South-East Asia and India, which at the end of 2017 almost completely consumed the US shipments not accepted by China due to the import quota cut. Also, in 2018, South-East Asia and India have proceeded with strong purchases of the comparatively lower-quality US OCC (see the section below). Mexico is another opportunity, driven by strong demand, and we expect Mexico to take in an additional 400,000 tonnes of OCC in 2018 due to planned recycled containerboard capacity expansion.

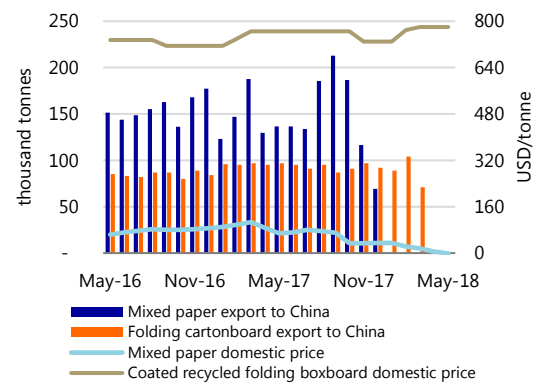
As changes in China play out, US recycled containerboard producers might develop a competitive advantage over virgin producers. The lower OCC price will lower the cost of recycled containerboard production, while pulp price hikes will squeeze margins for virgin producers. China's attempts to substitute OCC with unbleached kraft pulp (UKP) might somewhat tighten domestic US pulp supply. The majority of pulp supply in the US is consumed domestically, with the exception of BSK, one-third of which is exported to China. In the short term, we expect price hikes for both virgin and recycled containerboard to continue. However, the depressed OCC prices, if persistent, will pressure the virgin producers when it comes to their ongoing price hikes. This exerts margin pressure on virgin containerboard and box producers in the long run.

Figure 6: US OCC and containerboard export to China, volume and prices, May 2016 – May 2018



Source: RISI, Rabobank 2018

Figure 7: US mixed paper and boxboard export to China, volume and prices, May 2016 – to May 2018



Source: RISI, Rabobank 2018

Mixed paper is a major input for folding carton and is another item heavily impacted by China’s new policy. In 2016, exports from the US amounted to 3.6m tonnes, of which nearly 60 percent (2.1m tonnes) was exported to China (see Figures 1 and 2). Since China banned mixed paper imports in Q4 2017, both domestic and export mixed paper prices crashed (see Figure 7). US domestic mixed paper prices dropped to zero in April 2018, from around USD 100/tonne a year ago, while export prices dropped by over 90 percent, even to negative, at some ports. This has also created a significant overflow of materials at material recovery facilities (MRFs), causing over USD 460m of financial loss. We do not expect other regions to take in China’s mixed paper import volume in the short term due to the lack of processing capacity and logistical infrastructure, therefore leading to domestic oversupply of the 2m tonnes of mixed paper in both scenarios.

Calls for investments in recycling infrastructure

China’s new waste policy has a profound impact on the North American recycling industry. In the short term, local authorities have granted temporary landfill waiver permits to help alleviate material backup of some MRFs at the expense of environmental impact. Other MRFs are trying to improve manual sorting and cleaning to produce cleaner OCC. The increased costs will be passed on to local authorities, and both consumers and recycling companies are slowly shifting the risk of commodity price fluctuations to their customers by re-negotiating contracts.

In the long term, this is a wake-up call for the US to update its recycling systems in order to meet both the domestic sustainability agenda and the needs of the global market. It calls for more efficient and automated material collection, sorting, and recovery facilities that produce higher-quality scrape. Substantial investments are needed both from government grants and company funds, including consumer education on recycling practices. These national efforts will take time and significant investments, but are a necessary step for moving forward.

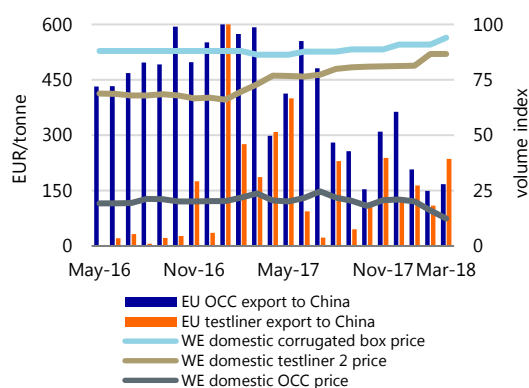
The EU must deal with a new reality

Impact will be felt across the whole supply chain

Europe is the second-largest exporter of RCP to China. In 2016, exports from the top-six EU exporting countries amounted to almost 8m tonnes, of which approximately 80 percent was OCC (see Figures 1 and 2). These large export volumes make Europe vulnerable to RCP export disruptions – Europe is self-sufficient in OCC and exports over a third of its consumption volume. Therefore, both scenarios would reduce OCC exports from Europe to China significantly and continue to affect price developments along the supply chain.

Driven by China's new waste import policy, OCC prices across Europe declined significantly in the beginning of 2018 – showing an average price decrease of 40 percent between December 2017 and March 2018 (see *Figure 8*). Though Europe's domestic OCC prices might fall a bit further, we expect them to stabilise in the longer term. This is supported by healthy domestic demand and containerboard capacity additions. Also, China's recent additional inspections of US RCP are creating potential demand in China for European higher grades. In addition, [there is a potential partial recovery in Chinese imports](#).

Figure 8: European OCC and testliner export to China and domestic prices, May 2016 – March 2018



Note: WE = Western Europe (includes Germany, France, Italy and the UK).

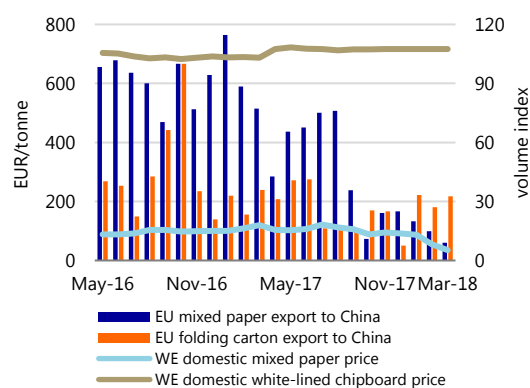
OCC and Testliner (January 17 = 100, RHS).

OCC volume in Jan-17 = 675,502 thousand tonnes.

Testliner volumes in Jan-17 = 2,648 thousand tonnes.

Source: RISI, Eurostat, Rabobank 2018

Figure 9: European mixed paper and folding carton export to China and domestic prices, May 2016 – March 2018



Note: WE = Western Europe (includes Germany, France, Italy, Spain and the UK).

Mixed paper and folding cartons (Oct-17 = 100, RHS).

Mixed paper volume in Oct-17 = 140,407 thousand tonnes.

Folding cartons volume in Oct-17 = 1,559 thousand tonnes.

Source: RISI, Eurostat, Rabobank 2018

Although OCC is the major element in production costs for recycled containerboard, and recycled containerboard accounts for about 80 percent of European containerboard production, falling OCC prices have not negatively impacted profitability of the European producers so far. On the opposite, on the back of strong demand and somewhat restricted supply, the average recycled containerboard price even increased by 10 percent from December 2017 to March 2018 (see *Figure 8*), providing an additional margin, next to savings on production costs. Traditionally, there is a delay, however, in passing on increased containerboard prices in corrugated box prices, negatively affecting corrugator margins.

A similar impact is observed in recycled folding carton (white-lined chipboard, WLC). Prices of mixed paper – the major element in production costs - have plummeted. The average price decreased by almost 70 percent since December 2017, allowing WLC producers to stabilise prices and to improve their margins even without the price increase (see *Figure 9*).

The RCP shortage and higher input costs in China also entice Chinese paper packaging players to look for imports of containerboard and folding carton rather than feedstock, thus slightly reshuffling global trade flows. This provides new export opportunities for European players.

Unlike Brazil, we expect limited direct impact for European pulp producers due to the relatively low export volumes outside Europe, including to China, coupled with strong domestic European demand and somewhat tight supply.

In both of the scenarios considered, the European RCP market is negatively affected by massive oversupply. However, under the 'hard line' scenario, there are fewer opportunities for OCC exports to China (approximately 0.9m tonnes to 1.8m tonnes, compared to approximately 1.1m tonnes to 2.3m tonnes under the 'current line'). In the short run, Europe might win some position from the US exports, due to the extra inspection requirements posed by China for US RCP batches. In the

long run – if or when US exporters are able to supply China’s required OCC quality – the US grades would likely be preferred due to their better fibre quality (coming from virgin-fibre boxes).

New export markets and investments in ‘quality’ recycling

As RCP prices have dropped dramatically or even turned negative for some poor-quality mixed paper grades, European RCP stocks are becoming full. So, in the short term, it is likely that some RCP will end up in the incineration plants (although capacity is limited) or even in landfill. This has already been happening in the UK – the most impacted European country (largest share of total European exports) (see *Figure 1*). Eastern and southern European countries with high landfill rates – which are allowed an extra five years to comply with the EU’s Landfill Directive– might become ‘the landfill of Europe’¹. We expect the oversupply to continue in both scenarios, but to a greater extent in the ‘hard line’ scenario. RCP exporters are urged to develop effective solutions to address this.

In the short term, RCP exporters could develop new export markets, such as South-East Asia, which is not yet accepting the comparatively lower-quality RCP. Freight costs from the EU might, however, be an issue as there may not be enough empty containers to bring back cargo ‘for free’ to these countries, as is the case with China. Also, the lower-quality RCP from the UK may probably find buyers at very low prices in Central and Eastern Europe.

In the longer term, we expect investments in infrastructure to pick up: innovations for paper packaging waste collection and separation/sorting throughout the whole of Europe. This should improve RCP quality, which is becoming a market priority as local demand needs to be supplied and the dependence on global recycling markets reduced. For example, in February 2018, the German waste management sector and paper industry joined forces to call for the abolition of commingled collection systems.

India and South-East Asia to benefit from reshuffling trade flows

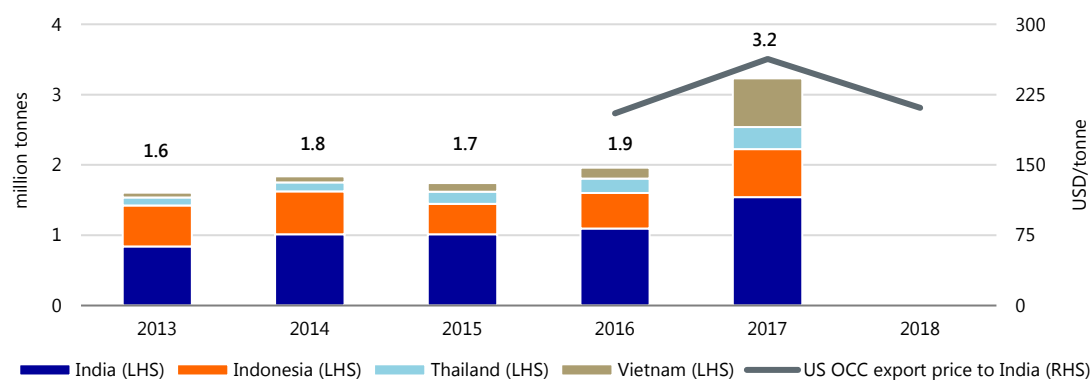
Growing imports of OCC in India and South-East Asia

India and South-East Asia are growing regions focused on recycled fibres in corrugated paper production. For example, in 2016, about 90 percent of India’s containerboard production was based on recycled fibre. In the whole region, poor segregation and collection infrastructure is however a limiting factor in improving domestic production of RCP, including OCC. For example, in India, the recovery rate of RCP is only about 30 percent. This means that imports of RCP will continue to stay relevant for India and South-East Asia in the coming years, creating RCP export opportunities for other regions in both the ‘current line’ and ‘hard line’ scenarios.

OCC imports to the region have already increased at a CAGR of 19 percent; from 1.6m tonnes in 2013 to 3.2m tonnes in 2017. This is partly caused by China’s recent policy move (see *Figure 10*). India is the largest importer (48 percent), followed by Indonesia and Vietnam (21 percent each). Vietnam has shown strong growth of 77 percent CAGR, from 70,200 tonnes in 2013 to 690,000 tonnes in 2017, due to soaring imports in 2017. At the same time, the price of imported OCC from the US to India has declined in recent months. Average imported prices of OCC in 2018 (year-to-date) are already down by 20 percent compared to average prices in 2017. This trend may continue in the coming months. However, [potential partial recovery in Chinese imports can help stabilise the price in the longer term](#).

¹ Among others, these countries include Bulgaria, Estonia, Greece, Cyprus, Malta, Romania, and Slovakia.

Figure 10: EU and US exports of OCC to India, Indonesia, Vietnam, and Thailand, 2013-2018



Source: RISI, Rabobank 2018

Large capacity expansions of recycled containerboard occurred in the region (capacity increased from 13.9m tonnes in 2012 to 19.3m tonnes in 2017), primarily in Indonesia and Vietnam but will not be enough to absorb all global oversupply of lower-quality OCC. This will be particularly challenging in the 'hard line' scenario, which might trigger the need for additional capacity expansion beyond 2018. This might be challenging to realise, though, considering the significant investments required. In addition, local governments are increasingly concerned about the environment and sustainability – similar to what we are seeing in China. This means that in the short run, India and South-East Asia are not likely to be able to absorb all of the lower-quality OCC resulting from China's import restrictions.

Potential for containerboard imports into China

In the medium term, growing containerboard production in South-East Asia following cheaper low-grade OCC imports, might also drive international companies (including Chinese ones) to set up new mills in this region. The lower transportation costs make the region more attractive for imported containerboard, compared to the US or Europe. A few strategic projects have already been implemented or announced, including:

- China's Nine Dragons: plans to install a 500,000 tonne per year recycled containerboard facility at its subsidiary (Cheng Yang Paper) in the Bình Dương province, Vietnam.
- China's Lee & Man: plans a new 400,000 tonne per year paper mill in Vietnam.
- Japanese Oji Holdings: announced in February 2018 that it will establish a new plant in Vietnam and expand containerboard production capacity at two of its existing plants in Malaysia.

Conclusion

The implementation of China's new waste import restrictions will likely have only a limited impact on non-exporters of RCP and will likely lead to only small growth in pulp demand to cover China's RCP import gap. US and European RCP exporters suffer most from these changes, facing significant RCP oversupply and related price declines. At the same time, on the back of healthy paper packaging demand, containerboard and boxboard producers benefit from the low recycled fibre prices. Dealing with the structural oversupply requires new thinking, however. In the longer term, substantial investments in innovative 'quality' recycling infrastructure is a necessary step for moving forward, because a higher RCP quality is vital to meet both local and global demand. Higher RCP exports to India and South-East Asia are also an opportunity, but are limited due to current process capacity constraints. In the medium term, increased RCP exports to South-East Asia might result in growth in containerboard imports from the region into China, also driving international companies (including Chinese ones) to set up new mills in the region.

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