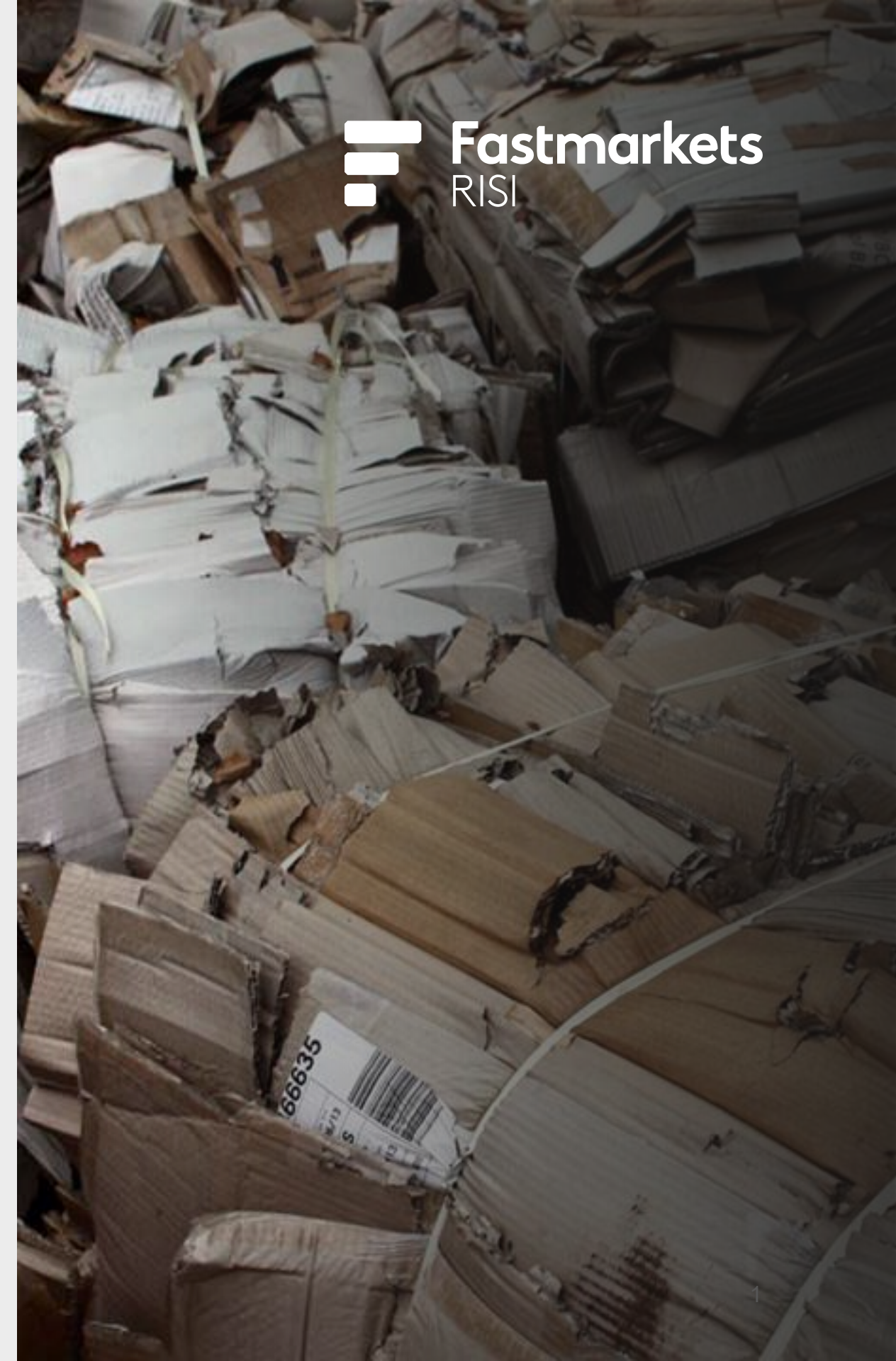


The US Recovered Paper Markets

January 2021

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Fastmarkets RISI



OCC markets



2017-2019

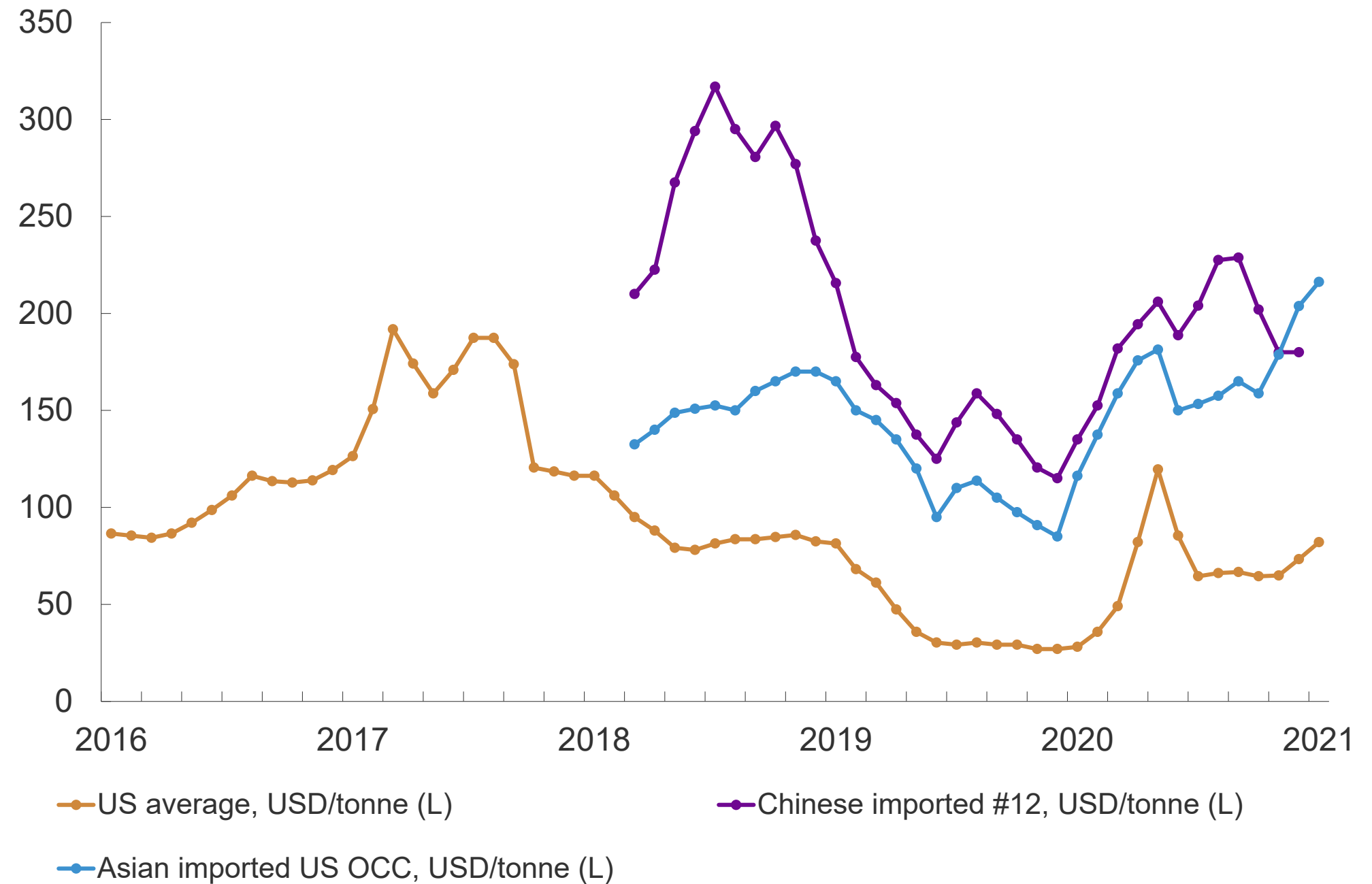
- Chinese and Other Asian countries' import restrictions
- Price decline in the USA

2020

- Supply dynamics: COVID-19
- Strong US domestic demand
- Impacts of growing e-commerce on both demand and supply
- Demand from Asia

2021

- A strong start of the year
- Issues with international freight



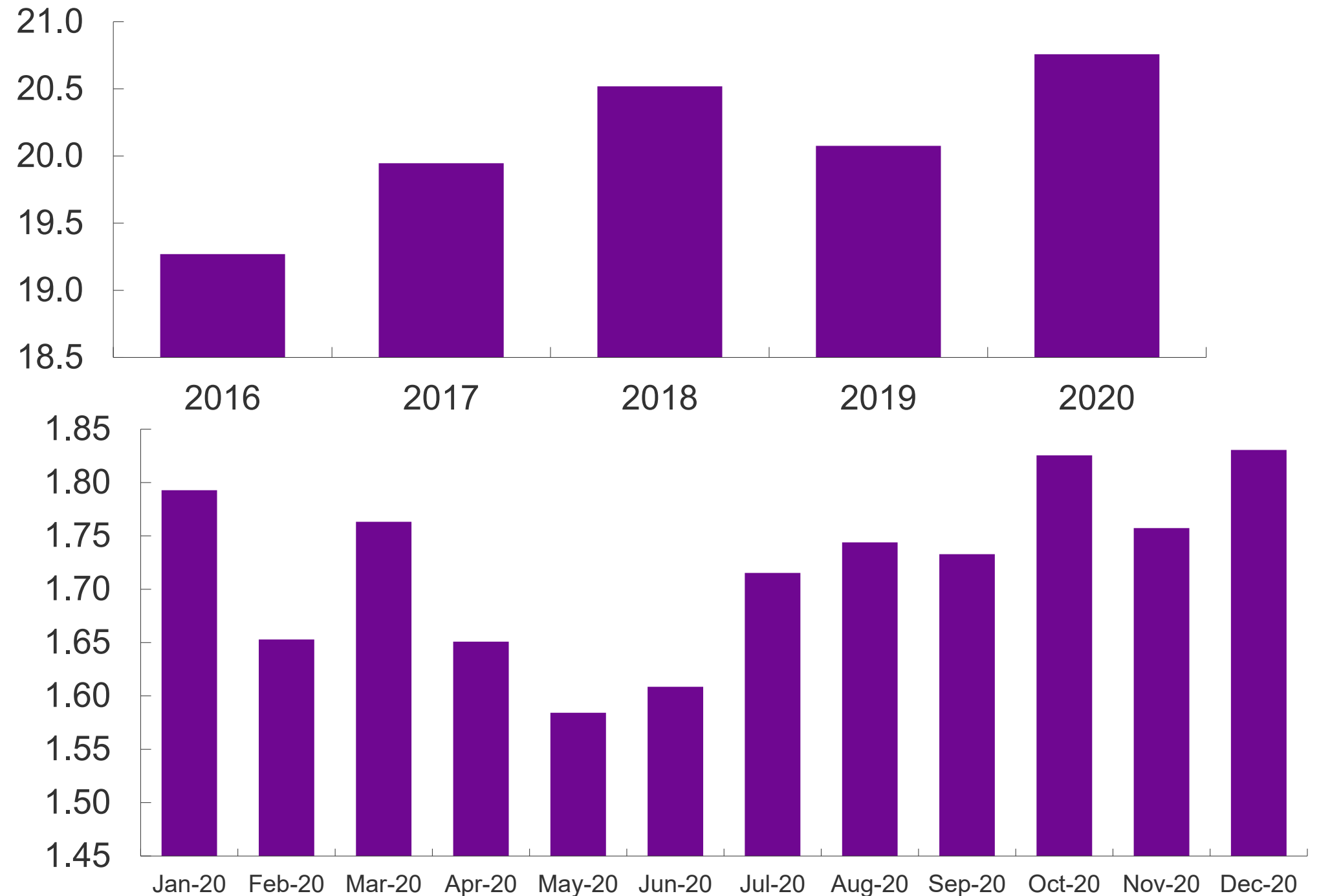
US OCC domestic consumption

Million tonnes



STRONGER THAN EXPECTED DOMESTIC DEMAND IN 2020

- Domestic OCC demand increased by 3.4% in 2020 after declining by 2.2% in 2019
- Stronger than expected demand in the spring despite of the COVID-19 pandemic
- Domestic demand strengthened again in the 2nd half of 2020
- Massive government stimulus and e-commerce boosted US paper packaging demand and output significantly



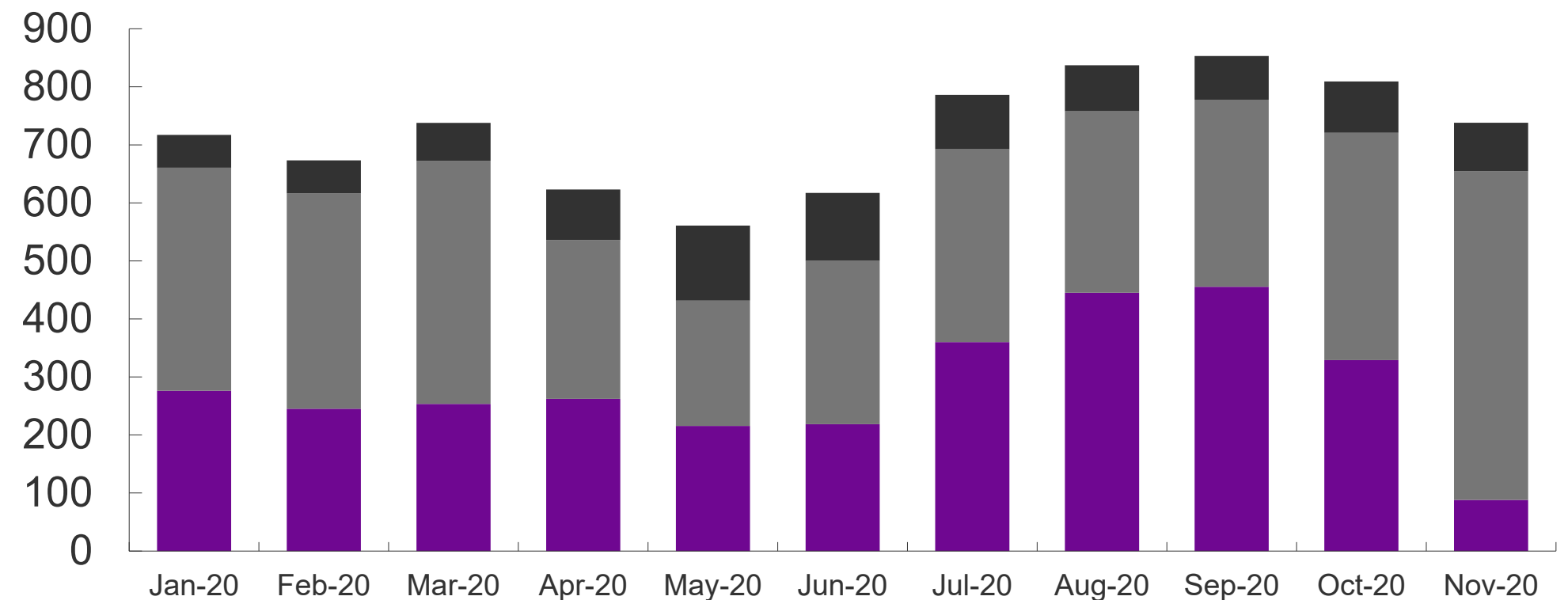
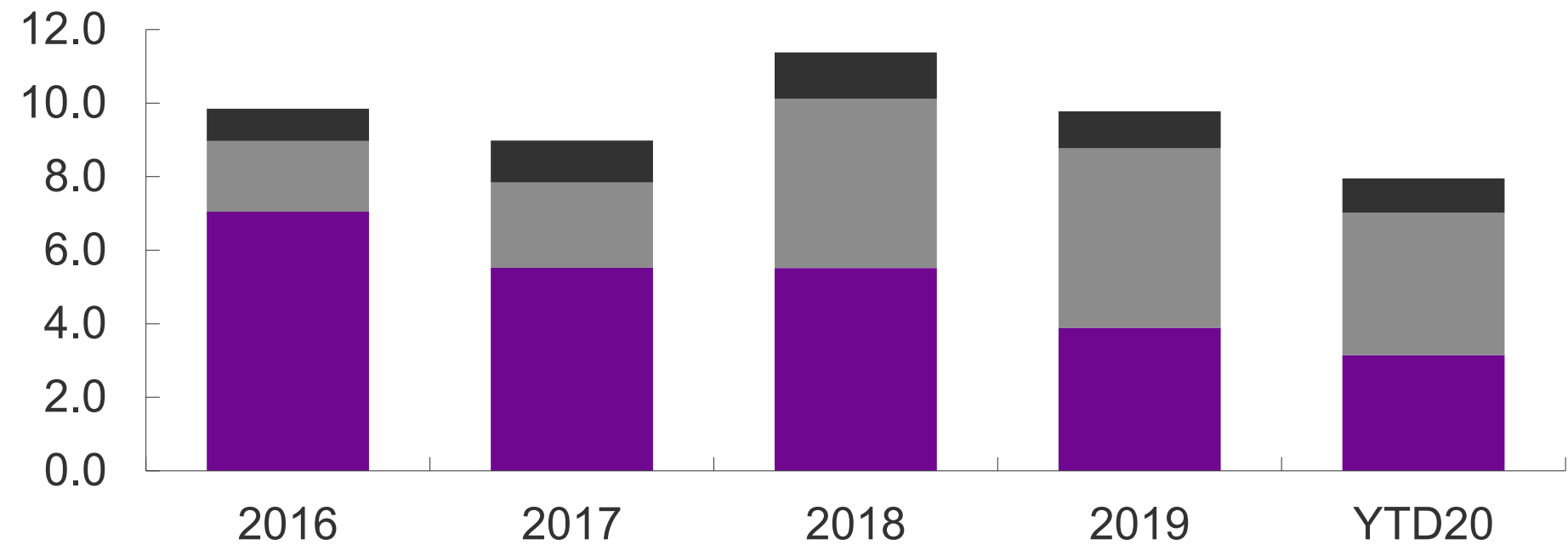
US OCC exports by destination

Million tonnes



CONTINUOUS DECLINE IN SHIPMENTS TO CHINA AND

- US OCC exports fell by 12.8% year-over-year in Jan-Nov 2020 after declining by 14% in 2019
- Exports to China dropped by another 14.3% year-over-year in the first 11 months of 2020 after plunging by about 29% in 2019
- Exports to Other Asia fell by about 14.0% during the same period after surging by 98% in 2018 and growing by 6% in 2019
- Asian import demand rebounded in Q3
- YTD: January-November



Mixed paper markets

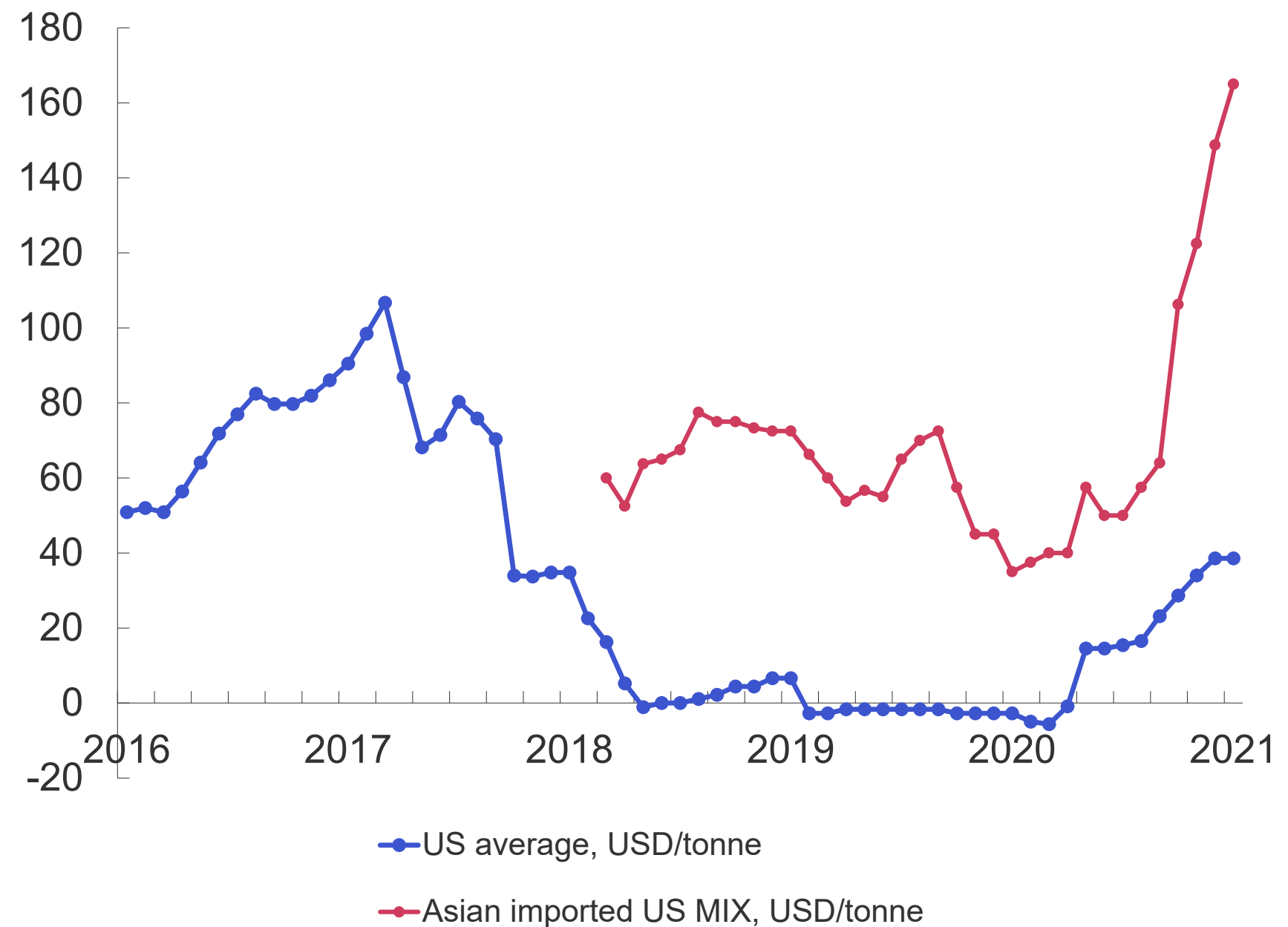


SHARP PRICE DECLINES IN 2017-2019

- China's mixed paper ban and Other Asia's restrictions on mixed paper imports
- Domestic demand did not grow enough to stabilize the US market

PRICES STABILIZED AND TRENDED UP IN 2020

- US domestic demand for mixed paper increased slightly in 2020
- Substitution effects
- Rebounding demand from Other Asia
- Improved mixed paper quality: recycling industry and e-commerce
- Surging mixed paper prices in Asia



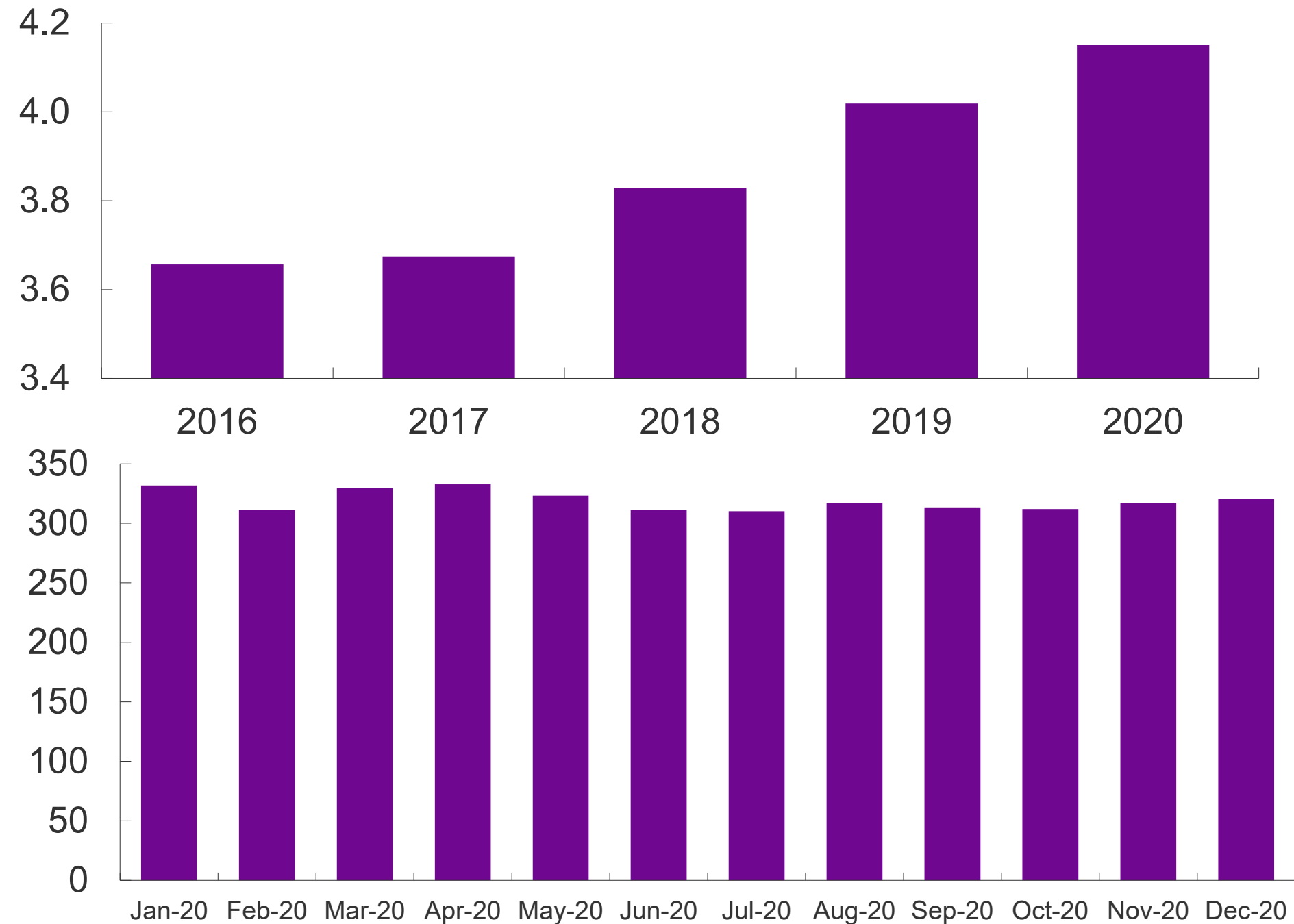
US mixed paper domestic consumption

Million tonnes



STEADY DOMESTIC DEMAND

- Domestic mixed paper demand increased by about 3% in 2020 despite of the COVID-19 after growing by 4% and 5%, respectively, in 2018 and 2019
- Substitution effect
- Paper mills' improved ability to process mixed paper: Pratt Paper



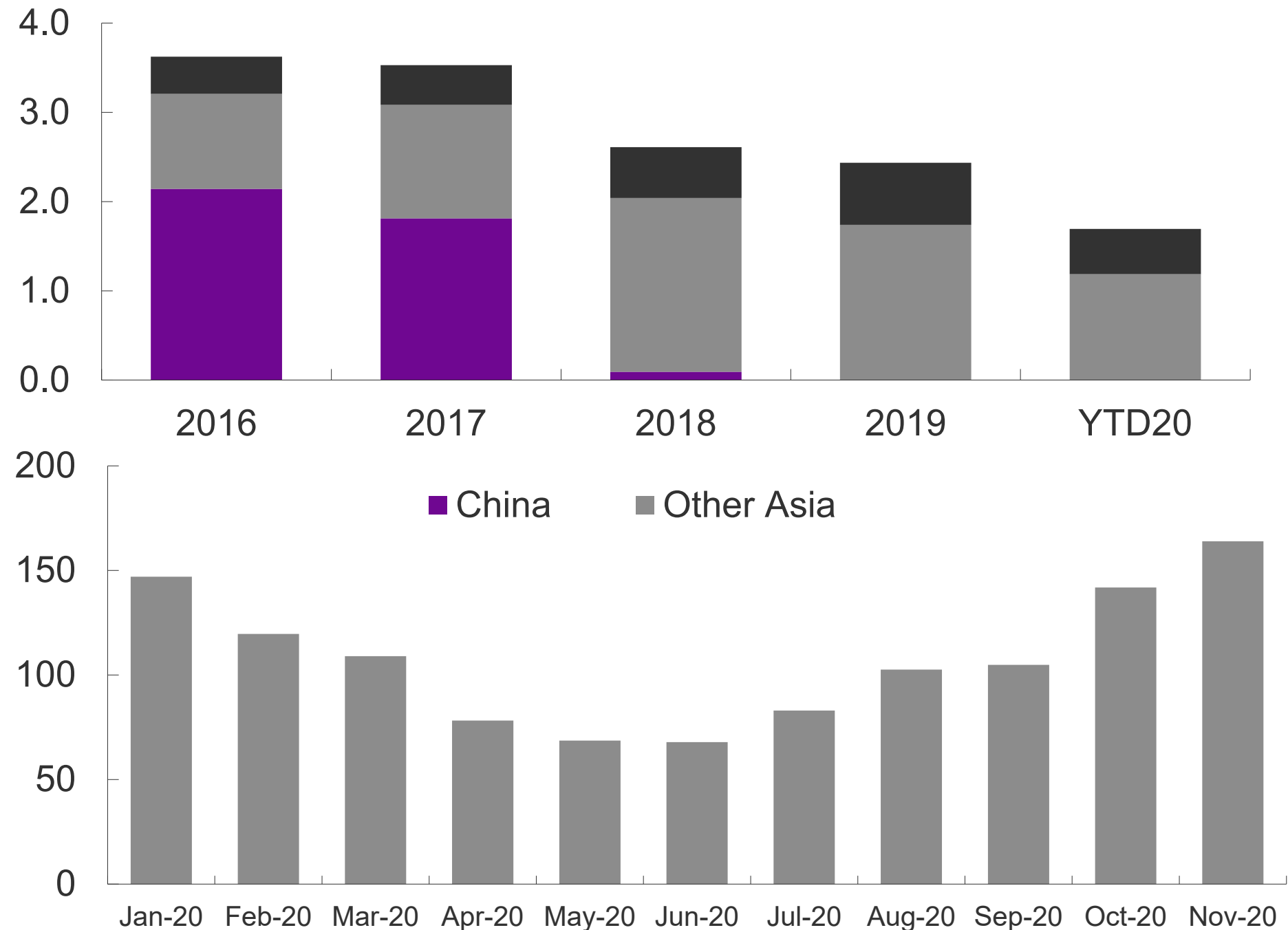
US mixed paper exports by destination

Million tonnes



CONTINUOUS DECLINE IN EXPORTS

- US mixed paper exports fell by 25% year-over-year in Jan-Nov 2020 after declining by 26% in 2018 and 7% in 2019
- Exports to China dropped by 15% and 95%, respectively, in 2017 and 2018
- Exports to Other Asia fell by about 29% year-over-year in the first 11 months of 2020 after surging by 53% in 2018 and declining by 11% in 2019
- Rebounded exports to Other Asia in the fall
- YTD: January-November



The COVID-19 pandemic and high grades RCP markets

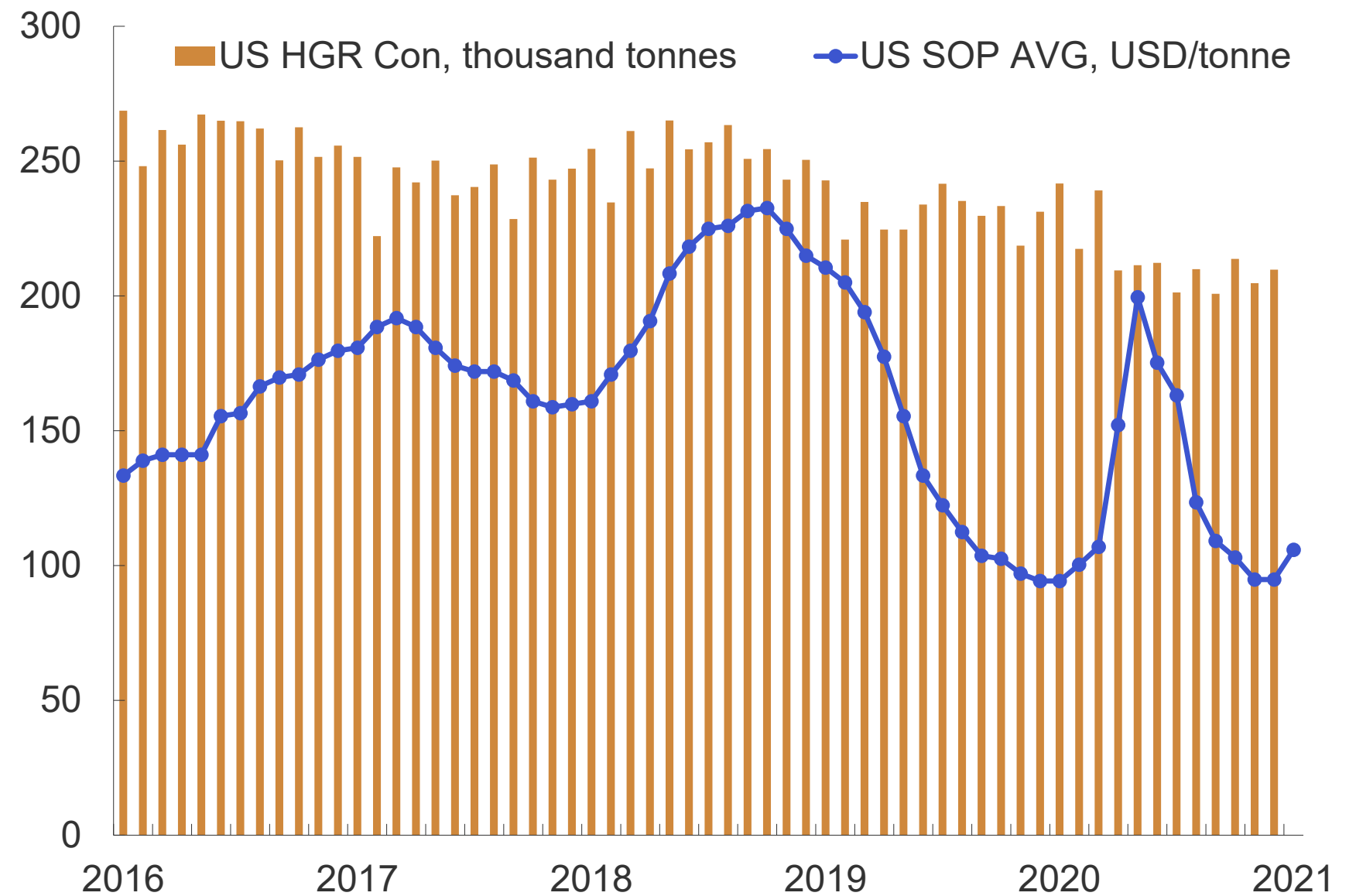


SUPPLY

- Severe supply shortage in the spring
- Work from home? Long-term impact on demand for graphic paper and the supply of high grades RCP: US P&W consumption is estimated to have plunged by 22% in 2020 after falling by 13% in 2019

DEMAND

- Away-from-home tissue sector suffered
- Fiber furnish switch: virgin and recycled
- US domestic demand was very weak: domestic consumption of deinking high grades dropped by about 7% in 2020
- US exports of high grades fell by about 23% year-over-year in the first 11 months of 2020



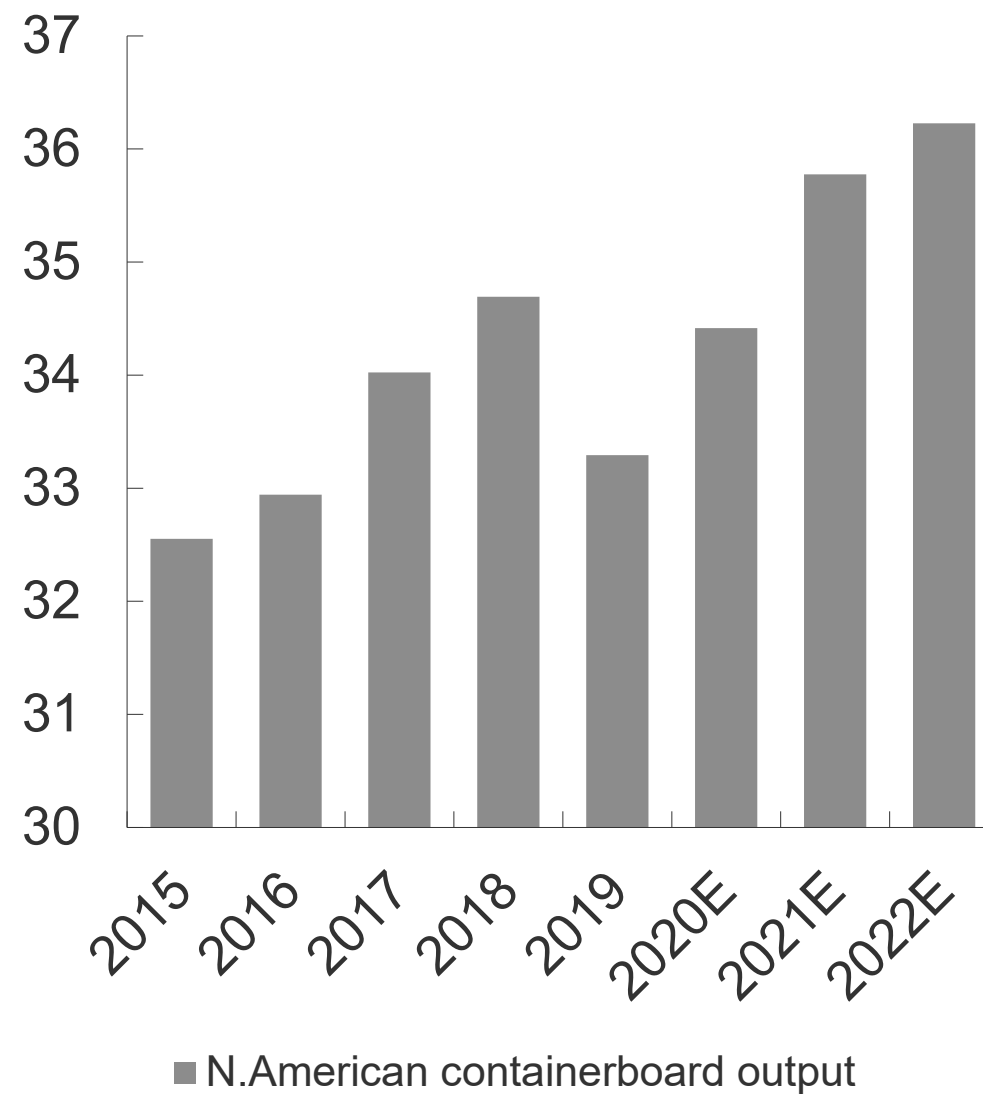
Expected growth in US domestic RCP demand

Million tonnes



GROWING PAPER PACKAGING PRODUCTION BASE

- Increased containerboard demand and production in 2020 despite COVID-19: fast-growing e-commerce
- Continuous additions of recycled-fiber-based containerboard capacity



Recycled containerboard capacity expansion/ Thousand tonnes	
2019	640
2020	745
2021	405
2022	190
2023	545

Expected growth in US domestic RCP demand

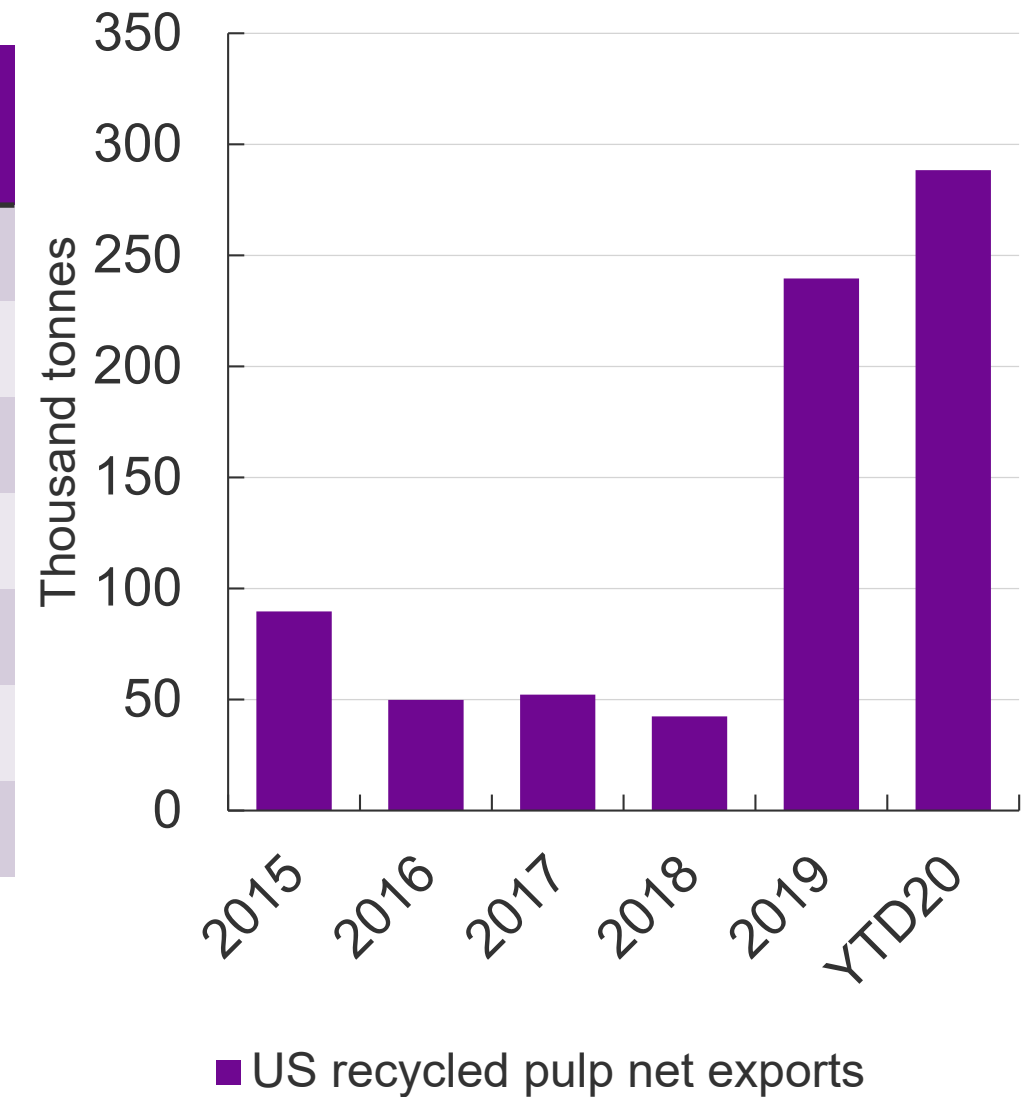
Million tonnes



RECYCLED PULP

- Rising recycled pulp output and exports
- US recycled pulp exports increased by about 33.6% year-over-year in Jan-Nov
- The US has and will continue to be one of the major recycled pulp suppliers for China
- YTD: January-November

Recycled pulp capacity / Thousand tonnes	
USA	2,230
Malaysia	1,680
Myanmar	680
Thailand	600
Laos	400
India	500
Other	900



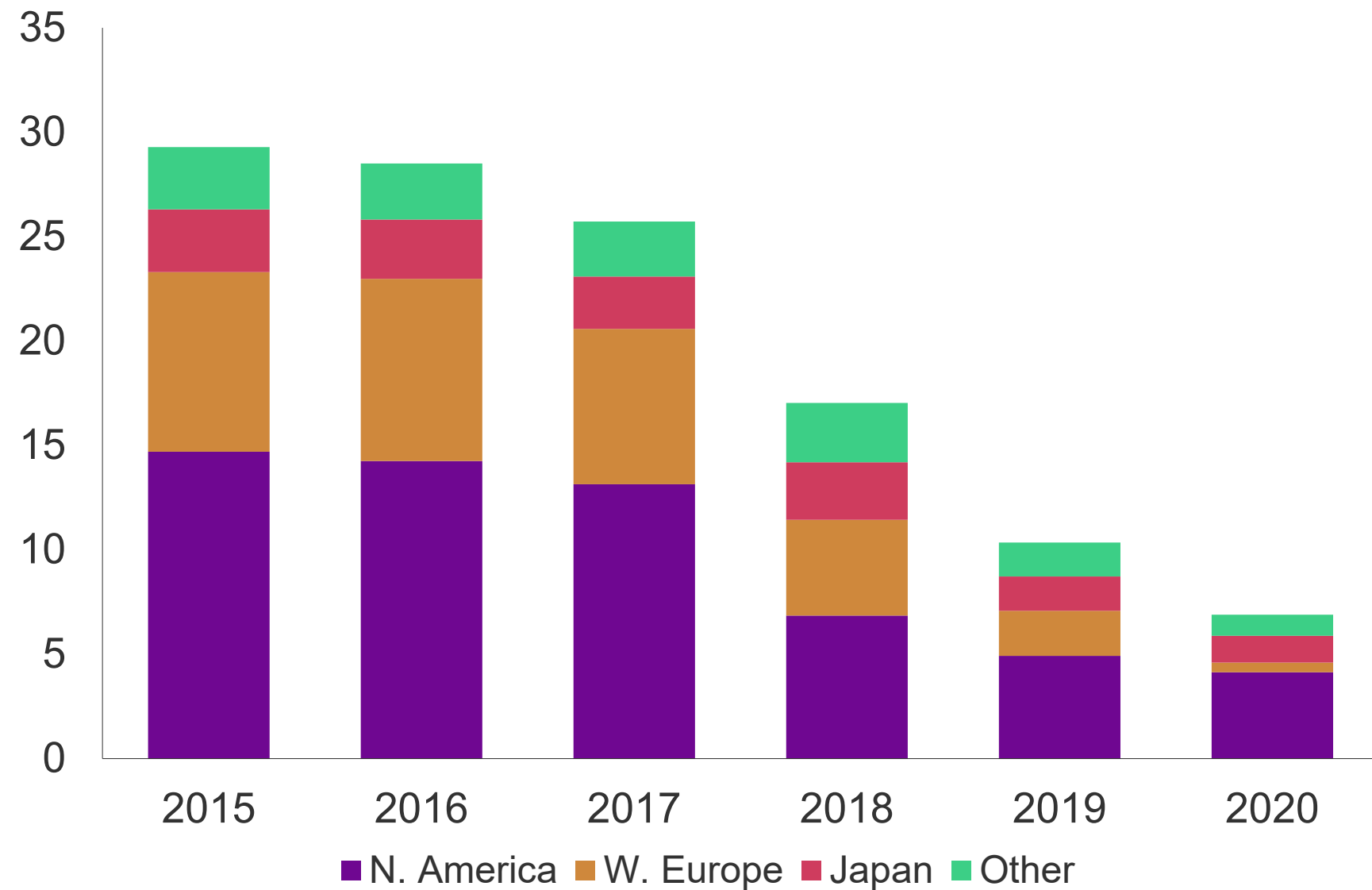
Chinese RCP imports by sourcing region

Million tonnes



DECLINING IMPORTS FROM MOST TRADE PARTNERS

- Chinese RCP imports fell by about 33.5% in 2020 after falling by 39% in 2019
- Imports from North America declined by about 16%, while imports from Japan and Western Europe fell by about 22% and 79%, respectively
- Fiber quality concerns
- China officially stopped RCP imports at the end of 2020



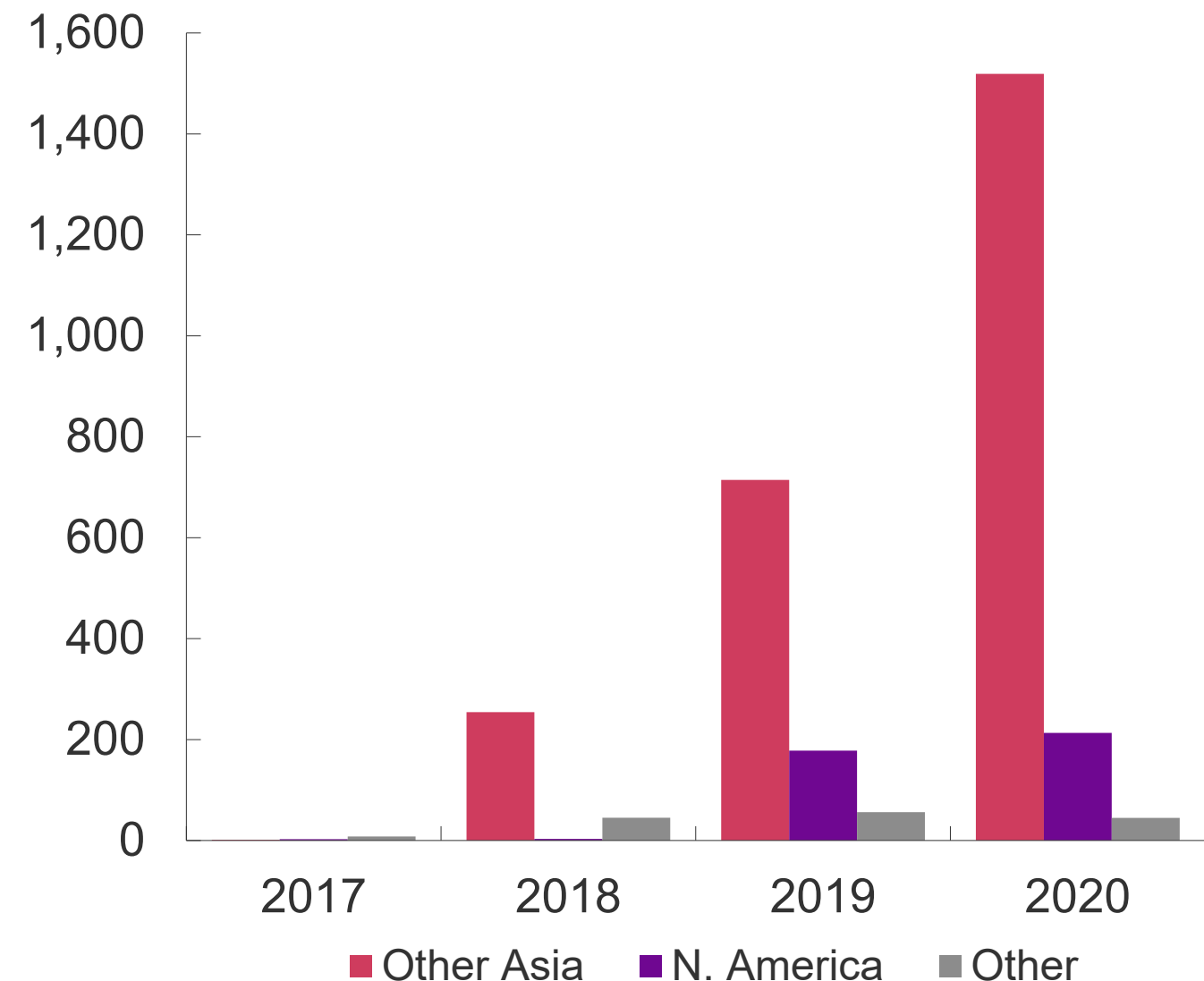
Chinese recycled pulp imports

Thousand tonnes



IMPORTED RECYCLED PULP HAS EMERGED AS A VIABLE OPTION

- Chinese recycled pulp imports continued to surge in 2020, with the US and Other Asia being the major suppliers
- About 6-7 million tonnes of recycled pulp capacity was announced in the US and Other Asia: about 2.0-2.5 million tonnes in the USA
- No well-established quality standard or specifications for imported recycled pulp yet, but regulations and quality standards/specifications for imported recycled pulp may be announced soon
- Risks associated with recycled pulp investments: uncertainties surrounding regulations in China and countries/regions where recycled pulp projects are planned



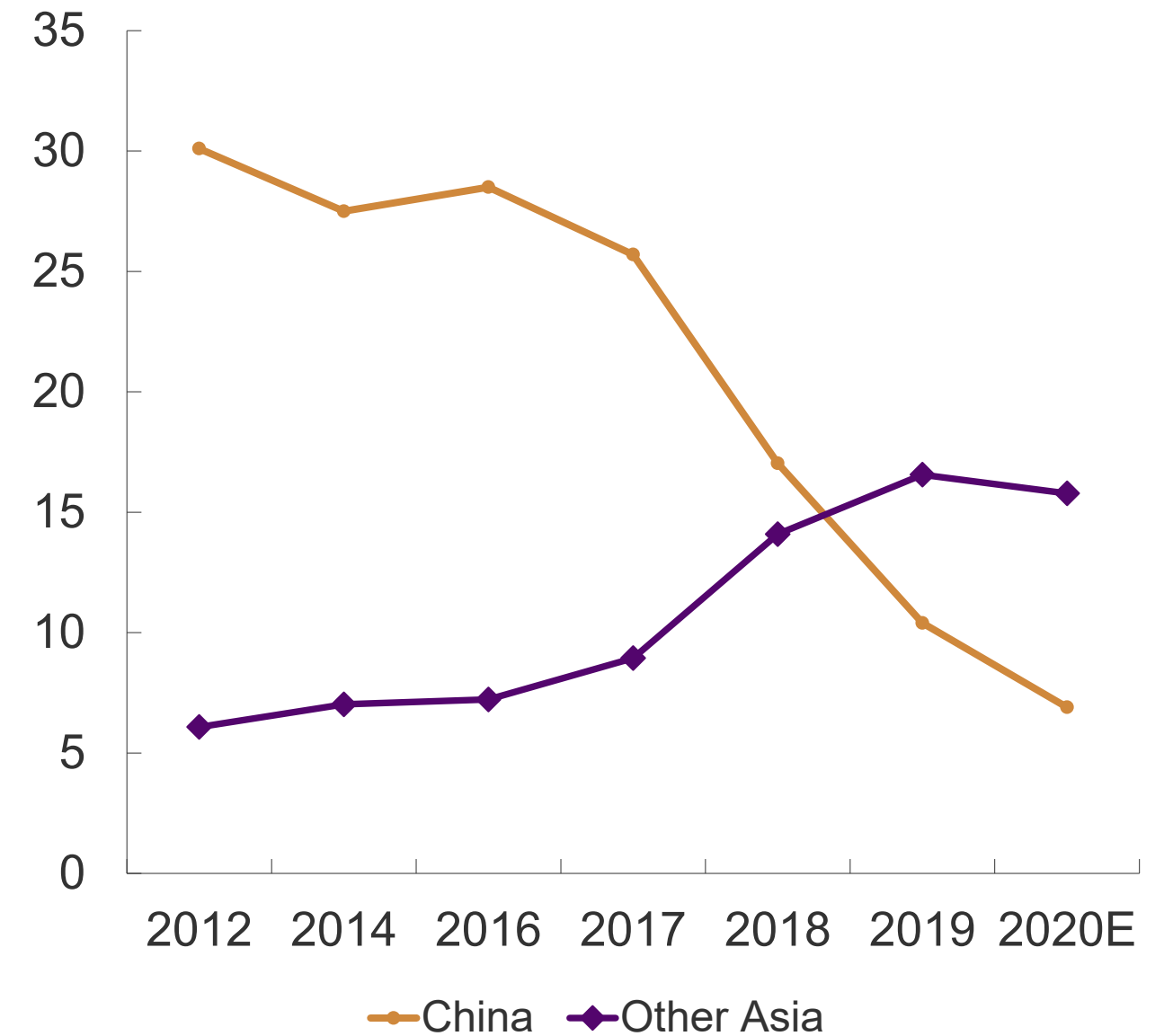
Other Asian RCP imports

Million tonnes



WILL OTHER ASIA RESTRICT RCP IMPORTS FURTHER

- Total net imports dropped by about 4-5% in 2020 after surging by 58% in 2018 and 18% in 2019
- Changing import source?
- India: To tighten mixed paper imports? Is the door still open?
- Indonesia: Settled? Uncertainty remains? Net imports fell by
- South Korea: What's the reality?
- Vietnam: To ban mixed paper imports by the end of 2021?
- Other countries: Imports increased sharply with new recycled pulp and paper projects, Malaysia, Laos, Thailand ...
- Overall Other Asia
 - Potential increase in RCP imports driven by growing demand
 - Increasing quality and environmental concerns over RCP imports



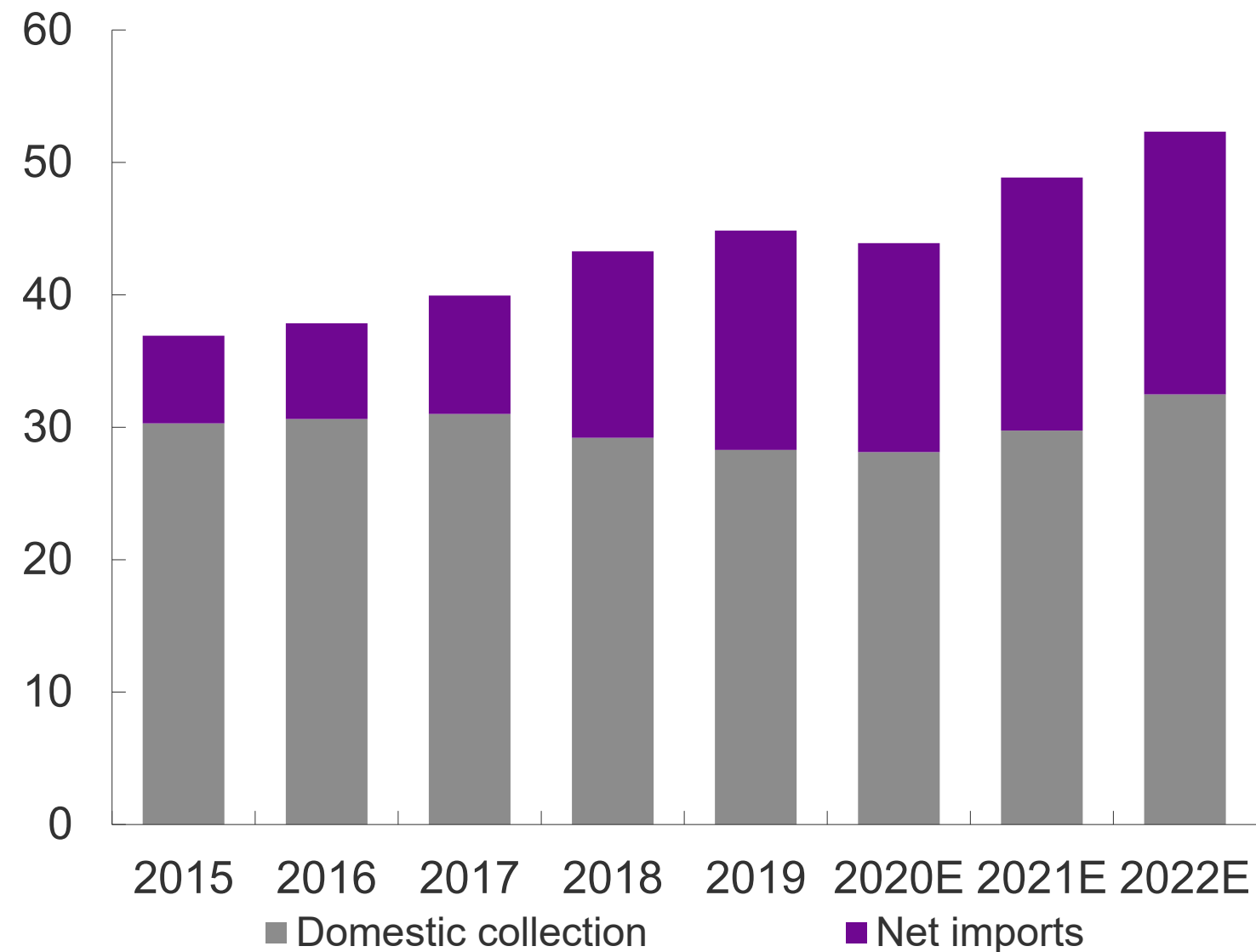
Other Asian RCP imports and domestic collection

Million tonnes



SHARP INCREASE IN IMPORTS

- Rapid increase in import share in total RCP consumption
- Increasing availability of imported RCP at low cost because of the decline in Chinese imports
- RCP has been imported to support the local paper/board machines and recycled pulp operations
- Limited growth in domestic collection
 - Less efficient recycling systems
 - World's new manufacturing hub (net "exports" of packaging materials leads to less potential supply of RCP)



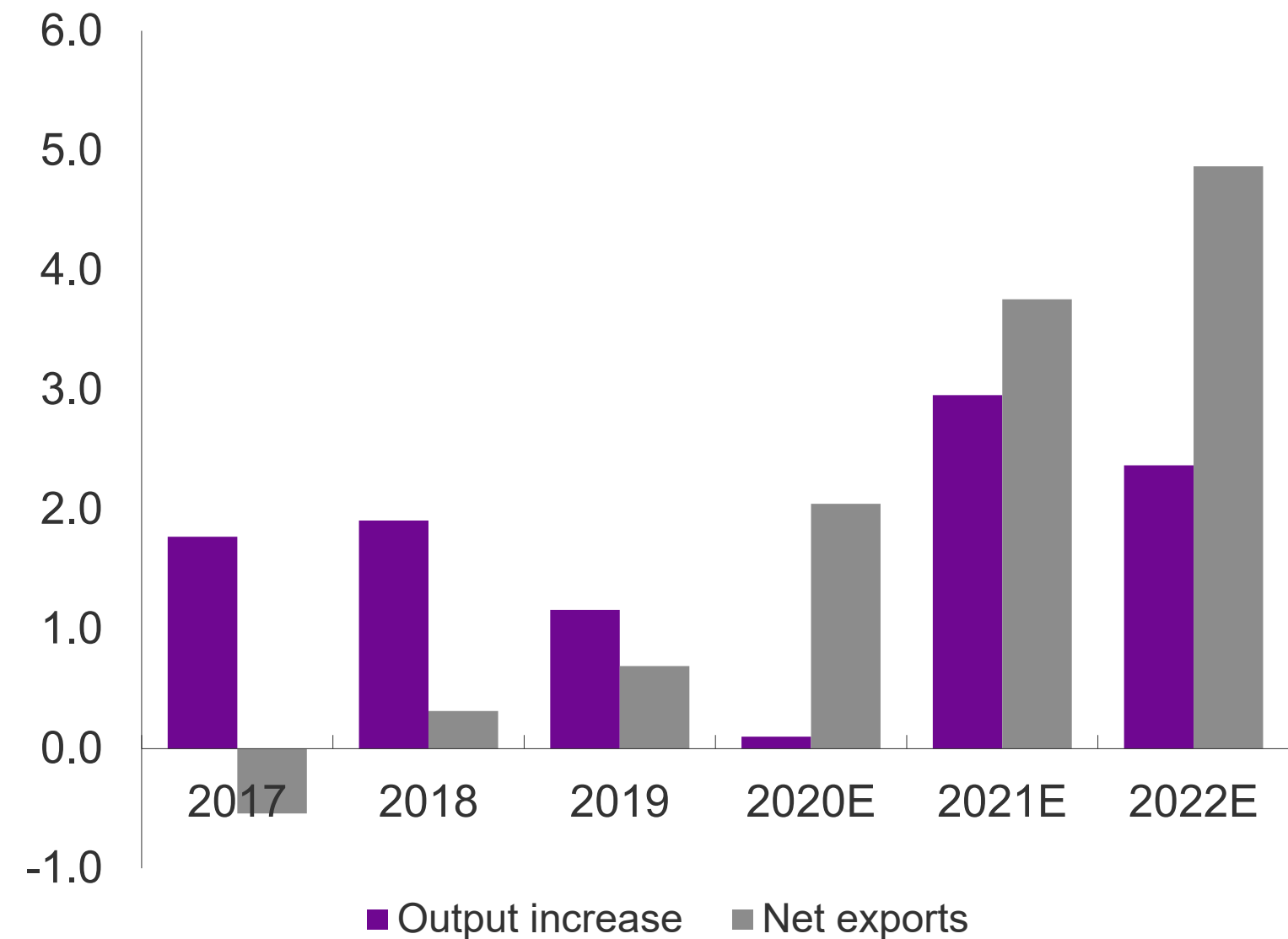
Other Asia's growing containerboard output and exports

Million tonnes



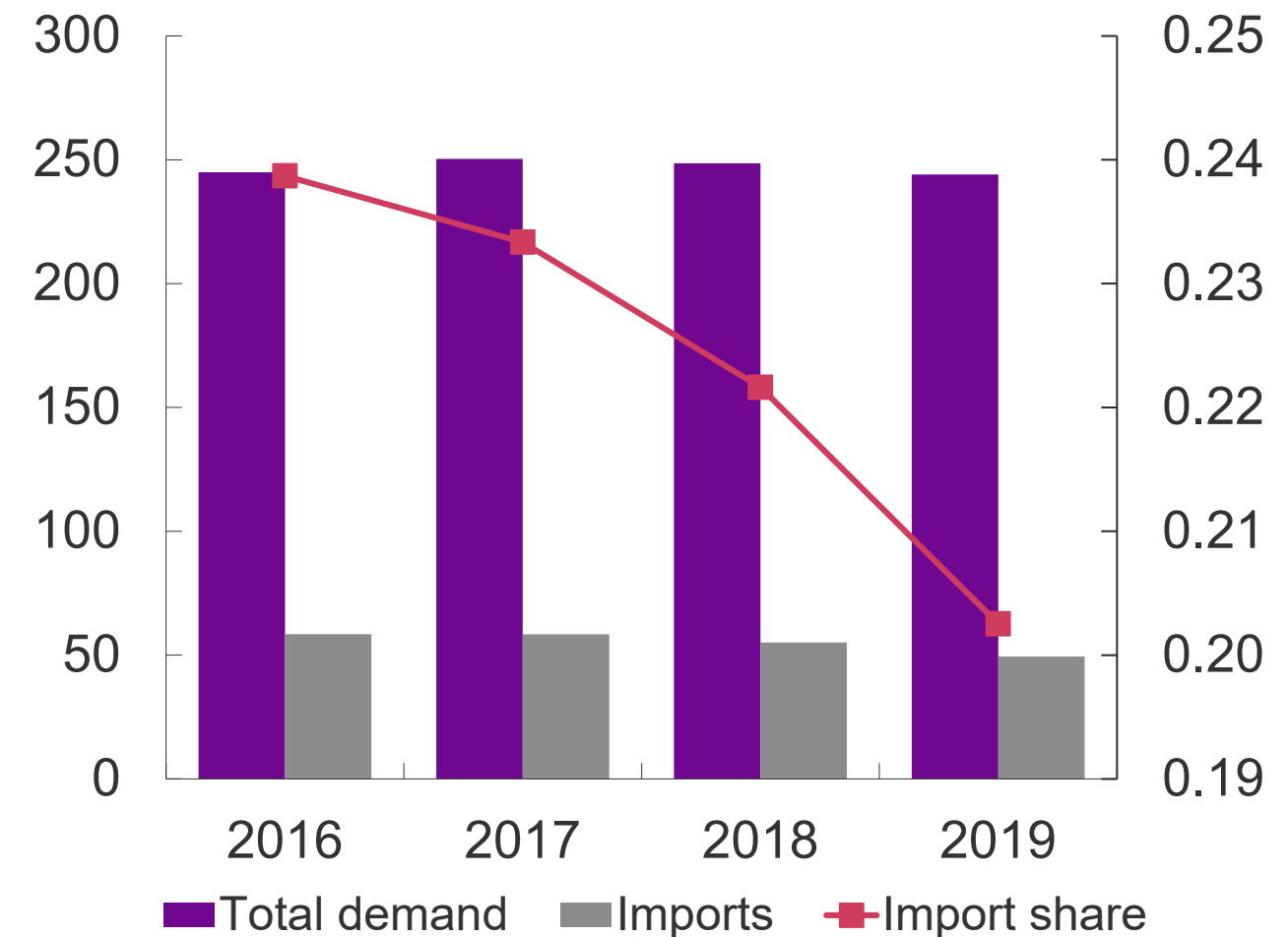
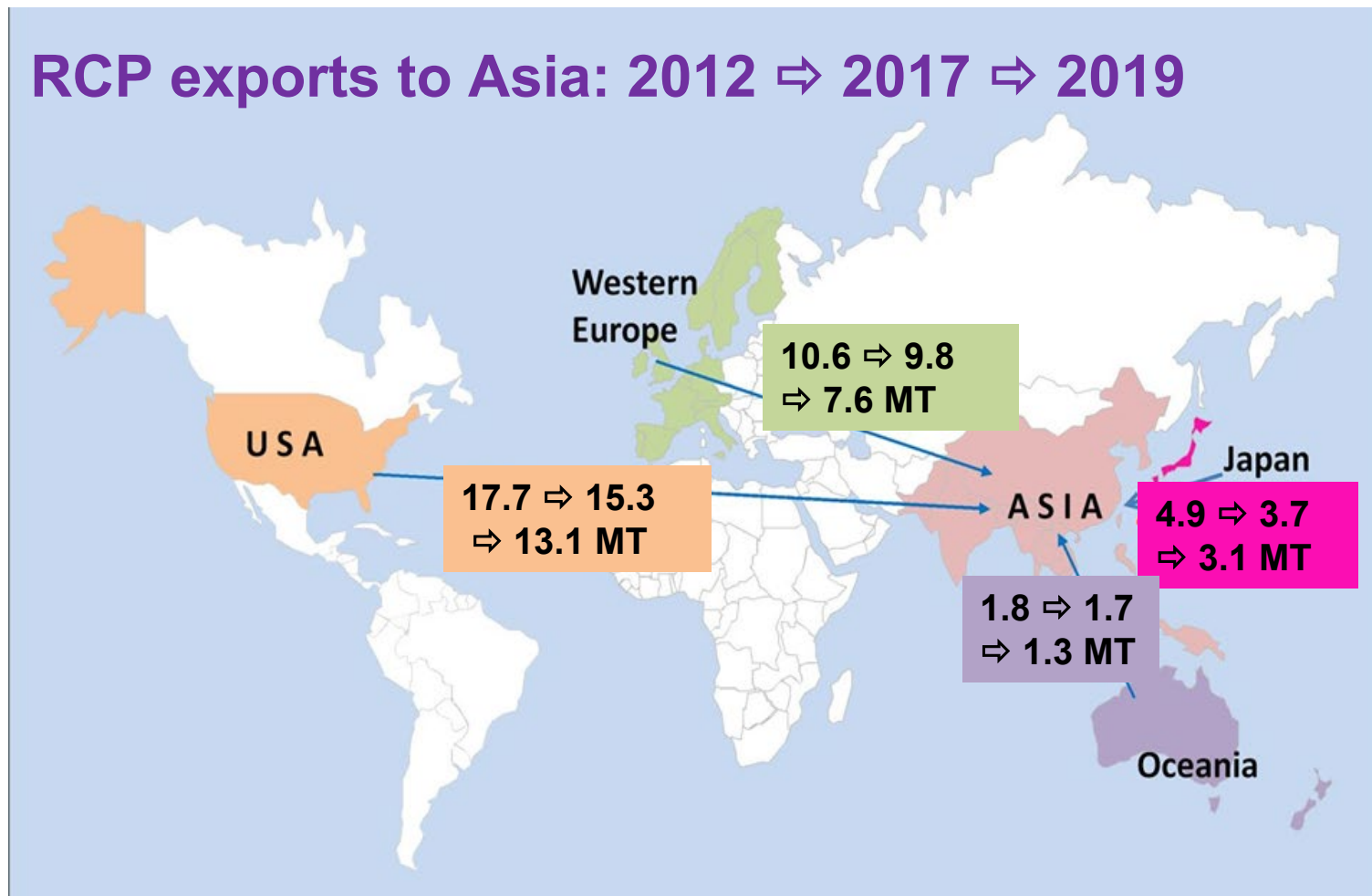
INCREASING EXPORTS TO CHINA

- Growing domestic demand and exports to China
- New recycled containerboard and cartonboard capacity, including investments by Chinese paper companies



Global RCP trade

Million tonnes



CHANGING TRADE FLOWS AND FALLING TRADE SHARE IN GLOBAL DEMAND

- International trade will remain an important part of the global RCP markets, with continuous change in trade patterns
- Will the global RCP markets become less volatile?

Summary



- Expanding recycled containerboard production base will continue to drive up the demand for RCP, especially OCC
- The major export countries and regions, including the USA, will expand their domestic RCP consumption further and reduce the reliance on exports
- Other Asia and China will continue to import large amount of recycled fiber through RCP or recycled pulp
- Trade regulations may bring considerable uncertainty to the US market
- Near term: COVID-19 pandemic and international shipping

Thank you!



For more information:

Fastmarkets
RISI

December 2018

World Recovered Paper Monitor

ANALYSIS AND FORECASTS OF THE GLOBAL RECOVERED PAPER MARKETS

Summary of the global recovered paper market

OCC

The US and European markets were mostly stable in December-January despite the seasonal pickup in supply. Chinese import prices kept falling in December and January, while prices for domestic grades rebounded in January after dropping sharply in December. Prices are expected to stabilize and rebound in the spring of 2019 as Chinese imports pick up again after the Lunar New Year. The price forecast has been adjusted downward to reflect the latest macroeconomic and paper and board outlooks.

ONP

Prices for high-quality ONP/OMG in North America and Europe were largely stable or softened somewhat in December and January as demand slowed. Prices in Asia fell as well. The ONP/OMG markets are predicted to stabilize over the next few months as supply continues to be constrained.

Mixed paper

The US domestic markets remained stable in December-January, while the export sector weakened as Asian demand retreated. Prices in the European markets were mostly unchanged thanks to steady domestic demand. Asian import prices for US and European mixed paper were largely flat in December and January, while those for Japanese grades fell significantly. The markets are predicted to remain relatively stable or soften somewhat over the next few months as a result of the sluggish demand from Asia.

High Grades

US prices for medium-grade deinking grades fell continuously in November-January as domestic demand weakened, while the markets for high-grade deinking grades and pulp substitutes held relatively stable despite the price decline for virgin pulp. The European markets for high grades held largely stable in December-January due to the tight supply and healthy demand. The markets are expected to soften somewhat in early 2019. The overall tight supply will help hold the markets for high grades relatively stable, although the expected drop in virgin pulp could add downward pressure on pricing for high grades.

See summary graphs on page 2

Economic Insights

- Uncertainty due to Chinese regulations
- OCC prices will rebound after LNY holiday
- High grade prices will drop with pulp prices

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