

## Global Pulp, Paper/Forest Products

# BofA Global C'board Supply/Demand, '23

## Edition: Likely trough, flattish recovery

Industry Overview

### BofA view: Middling outlook at present

The global containerboard market represents 190mn MT of demand and is one of the most important sectors we track from an equity market cap standpoint. Bottom-line, the combination of soft demand and previously announced capacity increases puts downward pressure on operating rates, and we see a 300-400bp drop from '22 to 80% levels between '23 & '25. Our latest BofA Global Containerboard Supply/Demand report incorporates the views of our global teams including George Staphos, Caio Ribeiro (Americas), Matty Zhao (Asia-Pacific) and Joffrey Bellicha Meller (Europe), as well as Fastmarkets RISI statistics.

### Too little demand now, longer-term some positives

We project global containerboard demand will be relatively flat at -0.2% in 2023 after -2% in 2022, with potential for 2% or greater growth in 2024-25. We forecast stronger growth driven by a +2-3% increase in China, a +2% increase in ROW (which includes Other, Asia, Central America, Middle East, Oceania, and Africa), and a flat to +1% increase in South America. This will be offset by weaker growth driven by a (10%) decrease in Mexico, (3%) decrease in Europe, (2%) decrease in Japan, and (1-2%) decrease in North America (NA). Sustainability, near-shoring, "e-comm 2.0" provide long-term demand positives.

### Operating rates to decline in 2023 and stay flat in 2024

Our supply/demand model forecasts a +3% increase in global capacity in 2023 given expected new capacity projects. By 2024, global capacity is expected to reach 247mn MT combining our estimates with RISI forecasts, up roughly +37mn MT from 2020 levels. Our global analysis suggests operating rates will decline to 79.7% in 2023, from 83.1% in 2022 and trend roughly around 79-80% in the next two years. In 2023, capacity growth is expected to outpace demand across NA, Europe, South America, Mexico, Japan and the ROW (which includes Other, Asia, Central America, Middle East, Oceania, and Africa). One interesting conclusion: operating rates globally were only in the mid/high 80s during the pricing boom. This suggests pricing was perhaps less driven by global capacity tightness than previously thought and more by supply-chain factors.

### Macro: Softer demand risk from consumers continues

BofA's US Economics team forecasts positive but weak GDP growth and then a mild recession starting in 3Q 2023. Currently, the timing and severity of a recession later this year adds uncertainty to forecasts. BofA is projecting slower economic growth across most regions in 2023 and 2024, as consumers are challenged by higher interest rates, persistent inflation, and other costs.

### Supply/demand models are great but imperfect by nature

As frequently pointed out by our consultants and our own work, investors would need to remember that supply/demand models are static and "miss" the signals that pricing and profits return to the supply side. Said differently, if operating rates wind up as low as we "calculate" for 2023-2024, that could trigger weaker pricing and more economic downtime and capacity shuts than we rightly forecast. In turn, this would potentially lead to project delays or cancellations, lower supply and better operating rates – we just do not know which projects or mills will be affected until an announcement, and don't attempt to forecast unannounced closures.

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**Refer to important disclosures on page 10 to 11.**

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# Stuck in mud 'til '25, maybe

## 190mn MT market with too much supply, for now

The Spring 2023 edition of our BofA Global Containerboard Supply/Demand analysis again incorporates the views of BofA's global team including George Staphos and Caio Ribeiro (Americas), Matty Zhao (Asia-Pacific, including China) and Joffrey Bellicha Meller (Europe), as well as Fastmarkets RISI statistics. Overall, our global analysis suggests operating rates will decline to 79.7% in 2023, from 83.1% in 2022 and trend between 79-80% in the next two years. That's because demand is expected to be flat-to-up modestly in 2023-25 while capacity outpaces demand across most regions.

### Operating rates to decline in 2023 and remain sluggish in 2024

#### Pricing under wraps; Supply chain may have been bigger deal than realized

We discussed our operating rate forecasts in the prior paragraph. In 2023, capacity growth is expected to outpace demand across NA, Europe, South America, Mexico, Japan and the ROW (which includes Other, Asia, Central America, Middle East, Oceania, and Africa). Meantime, we forecast operating rates will be down y/y across all regions before improving in 2024 and 2025. We forecast global demand will decrease -0.2% in 2023, increase +2.3% in 2024, and +2.5% in 2025 vs. capacity growth of +3.3% in 2023, +3.1% in 2024, and +1.7% in 2025. Ironically, if our analysis is correct, global operating rates were up when prices boomed in 2020-22 but not to "95%" levels. This suggests supply-chain factors had an underappreciated impact on pricing. Moreover, we could find that nameplate capacity increases overcorrected relative to underlying demand.

### Exhibit 1: BofA Global Containerboard Analysis

Our Capacity and Operating Rates analysis from our global containerboard supply/demand forecast

Global Containerboard (000 MT)	2020	2021	2022	2023	2024	2025
<b>North America</b>						
Capacity	39,079	40,767	40,482	41,437	42,661	43,325
% Change	0.3%	4.3%	-0.7%	2.4%	3.0%	1.6%
Operating Rate	94.0%	94.0%	89.9%	85.5%	84.7%	85.5%
<b>Europe</b>						
Capacity	44,122	46,614	47,390	48,117	49,527	51,317
% Change	3.3%	5.6%	1.7%	1.5%	2.9%	3.6%
Operating Rate	92.0%	94.5%	90.0%	82.6%	82.5%	81.7%
<b>South America</b>						
Capacity	8,193	9,427	9,791	10,191	10,934	11,333
% Change	0.5%	15.1%	3.9%	4.1%	7.3%	3.6%
Operating Rate	86.7%	79.3%	81.0%	78.3%	74.7%	72.9%
<b>Mexico</b>						
Capacity	3,802	4,486	4,527	4,552	4,752	5,068
% Change	-0.3%	18.0%	0.9%	0.6%	4.4%	6.6%
Operating Rate	80.5%	84.2%	84.4%	75.6%	80.9%	73.9%
<b>China</b>						
Capacity	60,829	62,252	64,212	65,532	66,632	66,632
% Change	4.6%	2.3%	3.1%	2.1%	1.7%	0.0%
Operating Rate	70.0%	71.8%	67.1%	64.4%	62.5%	63.1%
<b>Japan</b>						
Capacity	10,757	11,006	11,041	11,141	11,211	11,301
% Change	2.8%	2.3%	0.3%	0.9%	0.6%	0.8%
Operating Rate	90.2%	92.1%	92.4%	89.8%	89.9%	89.1%
<b>Rest of World</b>						
Capacity	43,791	54,424	54,775	59,001	61,613	62,664
% Change	9.1%	24.3%	0.6%	7.7%	4.4%	1.7%
Operating Rate	89.9%	89.4%	88.9%	89.5%	91.9%	87.8%
<b>Global</b>						
Capacity	210,572	228,977	232,218	239,970	247,330	251,640
% Change	4.1%	8.7%	1.4%	3.3%	3.1%	1.7%
Operating Rate	84.5%	86.2%	83.1%	79.7%	79.2%	79.8%

Source: Fastmarkets RISI, AF&PA, FBA, BofA Global Research estimates

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### Softer consumer demand

As a result, the BofA Global team anticipates an extended sluggish price environment in containerboard. For example, in North America, our survey work and other research continue to show that demand and pricing remain under downward pressure. As a result, we assume that prices decline \$15/ ton from current levels through 4Q23 and will continue to update our estimates based on our survey work and other research.

### Exhibit 2: Summary of BofA Global Containerboard Pricing

Containerboard pricing breakdown (2021A - 2024E)

	Grade	Unit	2021	2022	2023E	2024E
US	Unbleached Kraft Linerboard, 42lb	\$ / Short Ton	\$833	\$920	\$858	\$850
Europe	Kraftliner	€/ MT	€ 720	€ 650	€ 724	€ 650
China	Testliner, 130/140g	RMB / MT	¥4,496	¥4,174	¥3,501	¥3,451
Brazil	Linerboard (120-150g Unbleached Kraft)	BRL / Short Ton	R\$ 4,173	R\$ 5,050	n/a	n/a

Source: Fastmarkets RISI / PPW, Random Lengths, BofA Merrill Lynch Global Research estimates

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BofA's Global Economics team is projecting slower economic growth across most regions in 2023E and 2024E, as consumers are challenged in nearly all regions by higher interest rates, persistent inflation, and other costs. BofA's economic outlook includes a mild recession baseline scenario, starting in 3Q23.

### Exhibit 3: BofA global GDP forecasts

BofA's Global Economics team is projecting slower economic growth across most regions in 2023 and 2024

	2022	2023E	2024E
Global	3.4%	2.5%	2.7%
US	2.1%	0.9%	-0.1%
China	3.0%	5.5%	5.3%
Euro Area	3.5%	0.5%	0.8%
Japan	1.1%	1.0%	1.2%
Brazil	2.9%	0.9%	2.4%
Mexico	3.1%	0.8%	0.0%

Source: BofA Global Research estimates

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### Trade flows: US exports likely to decrease, China to import more

As for trade flows, we project US exports will decrease by 3-4% in 2023 given weakening global growth, even though producers theoretically would want to push more volume globally given weaker domestic demand and a desire to reduce inventories. Meanwhile, we project China will become a bigger net importer driven by the impact to production and tailwinds from economy reopening. China's imports are crucial and should be monitored. Overall, as capacity grows around the rest of the world, that will put downward pressure on developed markets' exports or raise the imperative for North America and Europe to increase their local consumption. Rest of World (ROW) winds up exporting at increasing rates given our calculations and forecasts.

# Global Containerboard Supply/Demand Analysis

## Exhibit 4: BofA Global Containerboard Supply/Demand Analysis

Our global containerboard supply/demand analysis

Global Containerboard (000 MT)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>North America</b>																
Apparent Consumption	29,279	29,582	29,565	30,157	30,560	30,938	31,073	32,065	32,904	32,148	32,952	35,293	33,580	32,988	33,324	33,971
% Change	6.3%	1.0%	-0.1%	2.0%	1.3%	1.2%	0.4%	3.2%	2.6%	-2.3%	2.5%	7.1%	-4.9%	-1.8%	1.0%	1.9%
Net Imports (Exports)	(2,772)	(2,769)	(2,739)	(2,558)	(2,639)	(2,656)	(2,957)	(3,143)	(3,052)	(2,551)	(2,783)	(2,053)	(1,909)	(1,844)	(1,843)	(2,132)
Inventory Change	-	-	-	-	-	186	(222)	71	253	(121)	(203)	408	(28)	(290)	45	0
Operating Rate	95.5%	94.8%	94.4%	95.4%	95.9%	95.1%	95.0%	96.1%	96.0%	91.4%	94.0%	94.0%	89.9%	85.5%	84.7%	85.5%
<b>Europe</b>																
Apparent Consumption	29,360	29,922	29,976	31,048	32,154	33,305	34,134	35,618	36,345	36,384	37,311	41,213	40,096	38,773	39,858	40,997
% Change	9.5%	1.9%	0.2%	3.6%	3.6%	3.6%	2.5%	4.4%	2.0%	0.1%	2.5%	10.5%	-2.7%	-3.3%	2.8%	2.9%
Net Imports (Exports)	(846)	(490)	(1,043)	(981)	(704)	(723)	(1,113)	(1,529)	(1,526)	25,061	25,314	28,287	29,408	31,853	33,934	(5,418)
Operating Rate	90.4%	89.9%	89.8%	91.1%	91.1%	91.1%	92.2%	94.2%	92.6%	90.4%	92.0%	94.5%	90.0%	82.6%	82.5%	81.7%
<b>South America</b>																
Apparent Consumption	6,955	7,188	7,245	7,495	7,461	7,584	7,417	7,719	7,779	7,750	8,068	8,358	8,940	8,976	9,066	9,156
% Change	10.6%	3.4%	0.8%	3.5%	-0.5%	1.7%	-2.2%	4.1%	0.8%	-0.4%	4.1%	3.6%	7.0%	0.4%	1.0%	1.0%
Net Imports (Exports)	675	649	679	721	676	703	612	752	844	759	962	879	1,005	1,000	900	900
Operating Rate	93.5%	92.3%	89.8%	88.6%	89.6%	89.3%	88.4%	88.5%	87.2%	85.7%	86.7%	79.3%	81.0%	78.3%	74.7%	72.9%
<b>Mexico</b>																
Apparent Consumption	3,119	2,999	3,295	3,292	3,484	3,757	4,206	4,542	4,643	4,516	4,299	5,326	5,025	4,523	4,975	4,925
% Change	13.8%	-3.8%	9.9%	-0.1%	5.8%	7.8%	11.9%	8.0%	2.2%	-2.7%	-4.8%	23.9%	-5.7%	-10.0%	10.0%	-1.0%
Net Imports (Exports)	954	893	987	940	1,049	1,037	1,294	1,482	1,375	1,284	1,238	1,551	1,206	1,080	1,130	1,180
Operating Rate	85.3%	82.3%	89.0%	89.1%	90.8%	87.2%	88.7%	88.6%	89.8%	84.8%	80.5%	84.2%	84.4%	75.6%	80.9%	73.9%
<b>China</b>																
Apparent Consumption	38,324	41,053	42,897	43,987	45,647	46,544	48,419	50,946	49,503	48,000	49,836	50,804	48,693	50,008	51,244	52,723
% Change	8.0%	7.1%	4.5%	2.5%	3.8%	2.0%	4.0%	5.2%	-2.8%	-3.0%	3.8%	1.9%	-4.2%	2.7%	2.5%	2.9%
Net Imports (Exports)	824	970	791	590	496	481	576	1,546	2,614	3,221	7,256	6,110	5,603	7,800	9,594	62,502
Operating Rate	87.1%	87.3%	87.2%	86.7%	87.0%	90.0%	92.4%	92.2%	84.0%	77.0%	70.0%	71.8%	67.1%	64.4%	62.5%	63.1%
<b>Japan</b>																
Apparent Consumption	8,711	8,842	8,799	8,736	8,921	8,935	9,023	9,157	9,255	9,231	8,862	9,175	9,235	9,051	9,232	9,324
% Change	4.7%	1.5%	-0.5%	-0.7%	2.1%	0.2%	1.0%	1.5%	1.1%	-0.3%	-4.0%	3.5%	0.7%	-2.0%	2.0%	1.0%
Net Imports (Exports)	64	31	72	(69)	(175)	(251)	(340)	(524)	(511)	(427)	(840)	(956)	(966)	(955)	(850)	(750)
Operating Rate	85.1%	87.7%	87.2%	88.1%	90.6%	89.9%	91.2%	92.3%	93.8%	92.3%	90.2%	92.1%	92.4%	89.8%	89.9%	89.1%
<b>Rest of World</b>																
Apparent Consumption	23,104	23,308	24,592	25,628	26,679	28,845	30,430	30,740	33,947	34,915	34,794	44,710	45,398	46,306	47,232	48,649
% Change	10.0%	0.9%	5.5%	4.2%	4.1%	8.1%	5.5%	1.0%	10.4%	2.9%	-0.3%	28.5%	1.5%	2.0%	2.0%	3.0%
Imports	6,407	6,420	6,237	6,637	6,332	6,964	9,988	9,984	5,424	(21,827)	(23,514)	(26,089)	(27,315)	(31,801)	(35,633)	(31,099)
Exports	5,305	5,704	4,984	5,280	5,035	5,555	8,060	8,568	5,169	5,519	7,633	7,728	7,032	7,132	7,232	7,332
Net Imports (Exports)	1,102	716	1,253	1,357	1,297	1,409	1,928	1,416	255	(27,347)	(31,148)	(33,818)	(34,347)	(38,933)	(42,865)	(38,432)
Operating Rate	83.9%	83.9%	84.7%	84.6%	83.8%	82.9%	84.8%	87.3%	94.6%	91.1%	89.9%	89.4%	88.9%	89.5%	91.9%	87.8%
<b>Global</b>																
Apparent Consumption	138,853	142,894	146,370	150,343	154,905	159,908	164,702	170,788	174,377	172,944	176,122	194,879	190,967	190,624	194,931	199,746
% Change	8.3%	2.9%	2.4%	2.7%	3.0%	3.2%	3.0%	3.7%	2.1%	-0.8%	1.8%	10.6%	-2.0%	-0.2%	2.3%	2.5%
Net Imports (Exports)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operating Rate	89.2%	89.1%	89.0%	89.3%	89.5%	89.9%	91.2%	92.3%	91.0%	86.7%	84.5%	86.2%	83.1%	79.7%	79.2%	79.8%

Source: Fastmarkets RISI, AF&PA, FBA, BofA Global Research estimates

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## North America

### Expect 2023-24 box shipments to be flat in aggregate

We project box shipment growth will decline by (1-2%) in 2023 before picking up in 2024. Currently, BofA's US Macro team is cautious on the consumer and retail sector given recent weak total card spending per household (HH) data. Among other factors, weakness in ecommerce and Federal tax refunds are likely headwinds to spending – the



average refund size has been ~8% smaller vs. 2022. Ultimately, our forecast is in-line with expected growth forecasted by respondents in our recent BofA Box Survey (~2.5%; [see our 20 April 2023 report](#)). For 2023, we assume some impact from softer demand environment, additional capacity projects (see below), and an economic slowdown in 2H23. Our model currently assumes higher box shipment growth of around 1% in 2024 and 2% in 2025. Longer-term, we believe demand will be supported by next-wave e-commerce and related corrugated usage in fulfillment centers, automation and near- (re- / “friend-”) shoring.

### New capacity meaningful

We estimate around 2.7mn tons/yr. of new nameplate capacity is expected to start up between 2022 and 2023 on a gross basis. We project an operating rate of ~85% in 2023 which remains relatively flat through 2025. Our supply/demand model makes some adjustments for a phase-in period for the different capacity projects, but ramp-ups can be challenging for a new paper machine (PM). Additionally, import/export assumptions and trends are very important to the operating rate forecast, as are inventory strategies.

#### Exhibit 5: Containerboard Capacity Projects - North America

Around 2.7mn tons/yr. of new capacity is expected to start up between 2022 and 2023 on a gross basis

Company	Mill Name	Capacity (000 tons)	Date
WestRock	North Charleston, SC	(288)	1Q 2020
Verso	Duluth, MN	90	1Q 2020
Graphic Packaging	West Monroe, LA	(120)	2Q 2020
Sonoco	Trent Valley, CN	(89)	2Q 2020
Nine Dragons	Biron, WI	256	3Q 2020
International Paper	Selma, AL	450	3Q 2020
Bio Pappel	Port Angeles, WA	180	4Q 2020
Westrock	Evadale	180	4Q 2020
Westrock	Florence, SC	27	4Q 2020
Nine Dragons	Rumford, ME	300	4Q 2020
Packaging Corp	Jackson, AL	700	4Q 2020 - 4Q 2023
Midwest Paper	Combined Locks, WI	130	4Q 2020 - 1Q 2022
New-Indy Containerboard LLC	Catawba, SC	200	1Q 2021
Green Bay Packaging	Green Bay, WI	240	1Q 2021
Packaging Corp	Jackson, AL	130	3Q 2021
WestRock	Panama City, FL	(353)	2Q 2022
Sonoco	Hartsville, SC	(192)	4Q 2022
Atlantic Packaging	Whitby, ON	400	4Q 2022
Domtar	Kingsport, TN	600	4Q 2022
Nine Dragons	Biron, WI	450	4Q 2022
Pratt Industries	Henderson, KY	540	4Q 2023
Cascades	Bear Island, VA	465	1Q 2023
New-Indy Containerboard LLC	Catawba, SC	200	1Q 2023
WestRock	St. Paul	(200)	1Q 2023
WestRock	North Charleston, SC	(235)	2023
Cascades	Niagara Falls, NY	(90)	2023
Pixelle Specialty Solutions	Chillicothe, OH	400	2023-2025
Paper Excellence	Howe Sound, BC	300	2023-2025
Pratt Industries	US West Coast	400	2023-2025
Domtar	Marlboro, SC	-	2024-2025
SAICA	TBD	-	2023-2026
Crossroads Paper	Salt Lake City, UT	342	1Q 2025
Empire Recycled Fiber	Dayton, OH	350	2Q 2025
Domtar	Hawesville, KY	-	2026-2028

**Total net capacity increase (2022 to 2023):** 1,585

**Other announced, and / or uncertain capacity:** 1,792

Note: Projects shaded in blue have not been formally announced. Capacity and timing are BofA Global Research estimates or previously published estimates by RISI and other sources.

Source: Fastmarkets RISI, company filings, BofA Global Research estimates

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## Europe

### Demand: Short-term pain, long-term gains.

We expect box volumes to be down mid-single digit for 2023, with a U-shape recovery in 2024. This is driven by an inventory normalization in the first half of 2023 and overall weaker consumer/industrial demand. The long-term growth drivers remain intact in our view: 1) E-commerce penetration, and 2) Plastic-to-fiber transition. We believe the plastic-to-fiber transition could pick up the baton from e-commerce to drive higher growth until the end of the decade, as more consumer applications switch from plastic solutions to containerboard base solutions. We expect containerboard demand to average 2-3% CAGR by the end of the decade.

### Supply: We continue to think more capacity will be postponed/cancelled

Containerboard is a crowded industry, and capacity increase announcements flowed through until late-2022. We are seeing more reasonable managements (or “late to the party”) postpone their recently announced capacity increases (Stora Enso’s Langerbrugge mill for example), and we expect the higher end of the cost curve to start shutting down capacity if the market remains weak. We estimate operating rates to be in the 80/85% for 2023/24 in European containerboard. This is mainly driven by increased capacity amidst weaker production. What we do observe is a pickup in OCC prices from weak levels at the beginning of the year. That said, if as much capacity as announced does come to the market, we expect profitability (pricing) to be impacted for the longer-term.

#### Exhibit 6: Containerboard Capacity Projects - Europe

Approx. 8.7mn MT/yr. of capacity is expected to start up by 2025

Company	Mill Name	Capacity (000 MT)	Date
Bukoza	Hencovce, Russia	70	2019 / 2020
Smurfit Kappa	Facture, France	45	1Q 2020
Papier-und Kartonfabrik Varel	Varel, Germany	60	1Q 2020
GofroMaster	Novosibirsk, Russia	35	2Q 2020
Progroup	Sandersdorf-Brehna, Germany	750	3Q 2020
Blue Paper	Strasbourg, France	40	4Q 2020
Pro-Gest	Mantova, Italy	400	2020-2022
Hamburger Containerboard	Spremberg, Germany	500	2020-2022
Mariysky PPM	Volzhsk, Russia	35	2021
Naberezhnye Chelny CPF	Naberezhnye Chelny, Russia	72	2021-2022
Naberezhnye Chelny CPF	Naberezhnye Chelny, Russia	72	2021-2022
Stora Enso	Oulu, Finland	450	2020-2022
Mondi	Ruzomberok, Slovakia	200	1Q 2021
Papierfabrik Palm	Aalen, Germany	400	2021-2023
Kipas Kagit	Söke, Türkiye	240	2020-2022
Heinzel	Laakirchen, Austria	550	2022-2023
Kuzbasskiy Skarabey	Kemerovo, Russia	80	2021-2022
Hamburger Containerboard	Kutahya, Türkiye	480	2022-2024
Papresa	Renteria, Spain	205	3Q 2022
Ilim Group	Ust Ilimsk, Russia	600	2022-2024
VPK	Alizay, France	400	4Q 2022
Modern Karton	Shotton, United Kingdom	400	2H 2023
Mondi	Kuopio, Finland	55	4Q 2023
Kipas Kagit	Söke, Türkiye	480	-
Smurfit Kappa	Hoya, Germany	70	1Q 2023
Norske Skog	Golbey, France	555	2023-2025
SCA	Obbola, Sweden	275	2023-2025
Norske Skog	Bruck, Austria	210	2023-2025
Arkhangelsk Pulp & Paper	Novodinsk, Russia	700	2024-2025
SFT Group	Maykop, Russia	280	2023-2025

**Total capacity increase (2020 to 2025):**

**8,700**

Source: Fastmarkets RISI, company filings, BofA Global Research estimates

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## China

We project strong box shipment growth in China following the COVID restrictions lift that would result in demand normalization. We increase our consumption demand forecast by +2.9% in 2023, +3.1% in 2024 and +3.6% in 2025. BofA is forecasting for moderate GDP growth of +5.5% in China, which may support consumer spending. Fastmarkets RISI estimates that Chinese board mill's downtime was ~1mn tonnes between February – May in 2023. We believe the production curtailments could lead to a more balanced supply/demand outlook in China and support the containerboard markets more broadly. As for pricing, containerboard grade pricing ended 2022 largely flat but softened in early 2023.

### China: Structural over-supply means losses for longer

Contrary to the much-expected demand rebound following the COVID restrictions lift since late 2022, packaging demand has been very sluggish. Despite statistics showing an uptrend, with 4M23 total social retail sales +8.5% yoy and 4M23 total exports +2.5% yoy, feedbacks from paper mills and experts have stayed negative. Such domestic consumption recovery is not across-the-board but possibly concentrated in certain categories like travel, with less packaging demand. For exports, the orderbook of consumers good exports, who consumes the most packaging, have stayed lukewarm, if not weaker. A combination of these two factors have triggered considerable price cuts year-to-date, culminating in an industrywide loss-making scenario. Such prolonged loss-making window since mid-2022 has been unprecedented.

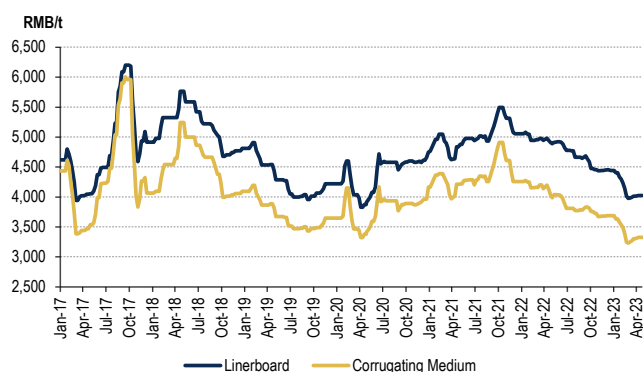
On the supply front, local producers failed to learn from mistakes, adding too many capacities during industry downcycle. After 4.2mt new capacities in 2022, we are now seeing another 3mt new capacities in 2023, with 1mt completed so far. Industry utilization rates should fall further to 63% in 2023, a further decline from 67%/ 73% in 2021/22. Practically, paper mills have been operating at 70-80% uptime in general to prevent inventory build but decreased output with higher unit fixed cost also intensified the unit losses.

The imports have again played a bigger role in the domestic market and now account for mid-teen market share due to price advantages. Imported containerboard of similar grades have been historically competitive than locally produced counterparts given their exclusive access of cheaper US wastepaper in Southeast Asia (currently c. USD160/t) vs. relatively expensive domestic wastepaper in China (currently c. RMB1,700/t). The removal of 5-6% import tariffs of test-liner and corrugated medium earlier this year has aggravated such price disadvantage to RMB200-300/t in general, luring more downstream switching. Unless domestic paper prices drop further closing the gap, which would be difficult as domestic wastepaper have demonstrated strong cost supports at c.RMB1,500/t in March-April where demand has been the weakest and imports set to take higher market share going forward.

Such weak demand-supply is unlikely to improve in the foreseeable future, unless the Chinese market experience a notable surge in packaging demand absorbing the excess supplies, or the government again shutting down capacities like what it did in Dongguan back in 2016/17. We see limited catalysts for either case and we stay pessimistic on the industry.

**Exhibit 7: China containerboard prices**

China containerboard prices have been on the downward trend since late-2021.

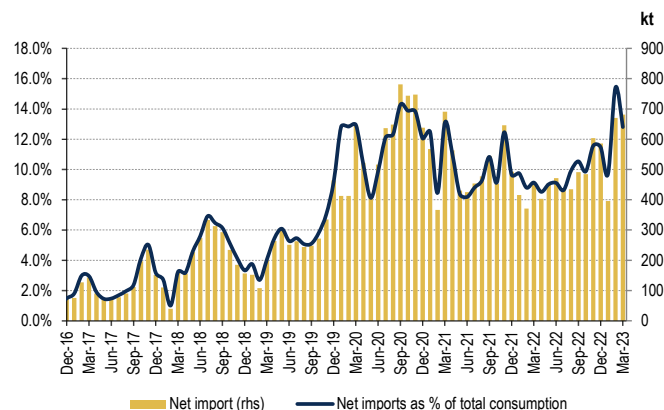


Source: UMPaper, BofA Global Research estimates

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**Exhibit 8: China containerboard import**

China containerboard net import rebounded to high level, now accounting for mid-teen of total consumption demand



Source: UMPaper, BofA Global Research estimates

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**Exhibit 9: China containerboard supply and demand models**

We are forecasting utilization rate to edge lower.

Containerboards supply and demand (mnt)	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
<b>Apparent Consumption</b>	<b>46.4</b>	<b>49.1</b>	<b>45.6</b>	<b>47.8</b>	<b>49.8</b>	<b>50.8</b>	<b>48.7</b>	<b>50.0</b>	<b>51.2</b>	<b>52.7</b>
% growth	2.4%	5.8%	-7.1%	4.8%	4.2%	2.1%	-4.2%	2.7%	2.5%	2.9%
<b>Net Imports</b>	<b>0.6</b>	<b>1.9</b>	<b>3.1</b>	<b>3.7</b>	<b>7.0</b>	<b>6.1</b>	<b>5.6</b>	<b>7.8</b>	<b>9.6</b>	<b>10.6</b>
% growth	9%	210%	66%	19%	92%	-13%	-8%	39%	23%	11%
<b>Production</b>	<b>45.8</b>	<b>47.2</b>	<b>42.5</b>	<b>44.1</b>	<b>42.7</b>	<b>44.7</b>	<b>43.1</b>	<b>42.2</b>	<b>41.7</b>	<b>42.1</b>
% growth	2%	3%	-10%	4%	-3%	5%	-4%	-2%	-1%	1%
<b>Average Capacity</b>	<b>50.8</b>	<b>51.3</b>	<b>53.4</b>	<b>57.0</b>	<b>60.6</b>	<b>62.3</b>	<b>64.2</b>	<b>67.0</b>	<b>68.1</b>	<b>68.1</b>
% growth	-2%	1%	4%	7%	6%	3%	3%	4.4%	1.6%	0.0%
Gross capacity addition	3.1	4.7	4.5	5.7	4.4	2.0	4.2	3.0	1.0	1.0
Effective capacity deduction (closure)	3.2	3.5	1.5	1.4	1.5	1.5	0.8	0.8	1.0	1.0
Net capacity addition	-0.1	1.2	3.0	4.2	2.9	0.5	3.4	2.2	0.0	0.0
Utilisation	90%	92%	80%	77%	71%	72%	67%	63%	61%	62%
Over-supply	4	2	8	9	11	11	16	17	17	15
Over-supply %	9%	4%	14%	16%	17%	18%	24%	25%	25%	23%

Downstream demand	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Food & beverage	19.5	20.1	20.5	22.5	21.4	21.3	20.9	21.6	22.0	22.4
% growth	2%	3%	2%	9%	-5%	0%	-2%	3%	2%	2%
Home appliances	13.0	14.2	12.3	11.5	11.0	11.7	10.7	11.0	11.3	11.6
% growth	-1%	10%	-14%	-7%	-4%	7%	-8%	3%	2%	3%
Furniture & building materials	8.3	8.3	8.2	9.1	11.9	12.2	10.7	11.1	11.5	11.6
% growth	-3%	0%	-2%	11%	32%	2%	-12%	4%	3%	1%
Others (inc. e-commerce)	5.6	6.4	4.6	4.8	5.5	5.6	6.3	6.3	6.5	7.1
% growth	23%	15%	-29%	5%	15%	2%	13%	-1%	4%	9%
<b>Total containerboard consumption</b>	<b>46.4</b>	<b>49.1</b>	<b>45.6</b>	<b>47.8</b>	<b>49.8</b>	<b>50.8</b>	<b>48.7</b>	<b>50.0</b>	<b>51.2</b>	<b>52.7</b>
<b>% growth</b>	<b>2%</b>	<b>6%</b>	<b>-7%</b>	<b>5%</b>	<b>4%</b>	<b>2%</b>	<b>-4%</b>	<b>2.7%</b>	<b>2.5%</b>	<b>2.9%</b>

**Downstream demand mix %**

Food & beverage	42%	41%	45%	47%	43%	42%	43%	43%	43%	43%
Home appliances	28%	29%	27%	24%	22%	23%	22%	22%	22%	22%
Furniture & building materials	18%	17%	18%	19%	24%	24%	22%	22%	22%	22%
Other non-durable goods (inc. e-commerce)	12%	13%	10%	10%	11%	11%	13%	13%	13%	13%
<b>Total containerboard</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: UMPaper, BofA Global Research estimates

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## Mexico – expect downward momentum

### Expecting -10% decrease growth in consumption

The historical data for our Mexican model is sourced from RISI (the industry trade association figures will not be published until later in June – we will review this at that time). Consumption is roughly ~5mn MT annualized and, based on our contacts and the industry data, it appears the Mexican industry is off to a challenging start in 2023 given loose supply/demand balance. Mexico is reliant on external markets, specifically on manufactured exports to the US, which our channel checks expect will likely fall in 2023. According to RISI, testliner capacity is increasing beyond demand (recall Grupo Gondi's testliner mill started up in 2021). Though agri-business could support most of demand, agriculture business trends remain uncertain partly given the high inflation and slowdown environment. Mexican food exports, though up, are currently behind pandemic levels. Our trade contacts relay that inventories are quite high.

## South America – operating rates to drop

### Modest consumption growth

Relative to 2020, South America capacity is forecasted by RISI to increase 3mn MT by 2024-25. The biggest increase comes courtesy of Klabin's 450kMT Puma II project in Ortigueira, paper machine 27 (PM 27) for the company. PM28 is due to come on in 2024 and will be aimed at boxboard but will have the ability to swing to linerboard. Overall, the team forecasts ~0.5% consumption growth in 2023 and a 6% in 2024 and 2025, with risks skewed to the downside.

#### Exhibit 10: Containerboard Capacity Projects – South America and Mexico

Approx. 3.2MT/yr. of capacity is expected to start up by 2025

Company	Mill Name	Country	Capacity (000 MT)	Date
Empresas Coipsa SA	Concepcion mill	Chile	120	2021
Smurfit Kappa Group	Yumbo mill	Colombia	8	2021
Grupo Gondi	Monterrey Mill	Mexico	400	1Q 2021
WestRock	Tres Barras Mill	Brazil	210	2Q 2021
Klabin	Ortigueira Mill	Brazil	450	3Q 2021
Agroforestal Obera	N/A	Argentina	500	2022
Papel Prensa	Buenos Aires Mill	Argentina	170	-
Empresas Coipsa	Concepcion Mill	Chile	200	-
Paraibuna	Juiz de Fora Mill	Brazil	100	2Q 2022
Cellulose Irani	Vargem Bonita Mill	Brazil	135	-
Trupal	Trujillo mill	Peru	78	2023
Grupo NOA	Quilmes mill	Argentina	267	2023-24
Productora Nacional de Papel, SA de CV (PRONAL)	Villa de Reyes mill	Mexico	516	2023-24
Fernandez	Amparo mill	Brazil	100	-

**Total capacity increase (2021 to 2025):**

**3,200**

Source: Fastmarkets RISI, company filings, BofA Global Research estimates

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