



**Where is my Paper?**

**That's not another  
price increase, is it?**



# Introductions

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Greg Lovensheimer

Executive VP & COO, Millcraft Paper

35 Years in the Paper Industry with roles at Mead, MeadWestvaco, NewPage, and Glatfelter

Joined Millcraft in 2013

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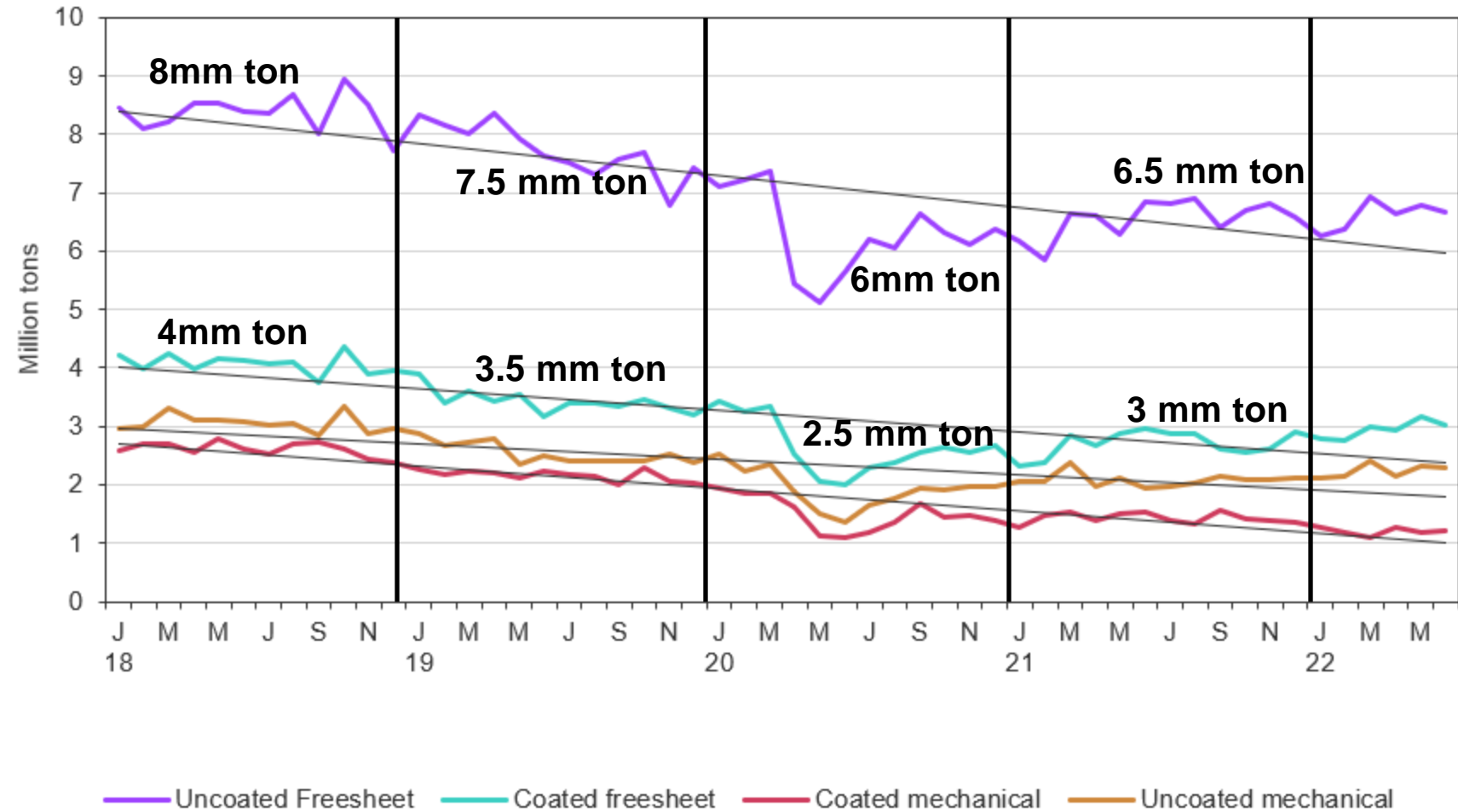
# TODAY'S DISCUSSION

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1. Review: How did we get here?
2. The need for imports
3. What's happening globally that can/will affect imports
4. How much inventory is there and what impact will this have on availability/pricing?
5. Pricing forecast for 2022 – 2023
6. The 5 forces that will impact supply chains going forward

# PRE-COVID GRAPHIC PAPER GRADE DEMAND DECLINES

North American apparent consumption of printing & writing grades  
Seasonally adjusted, annual rate

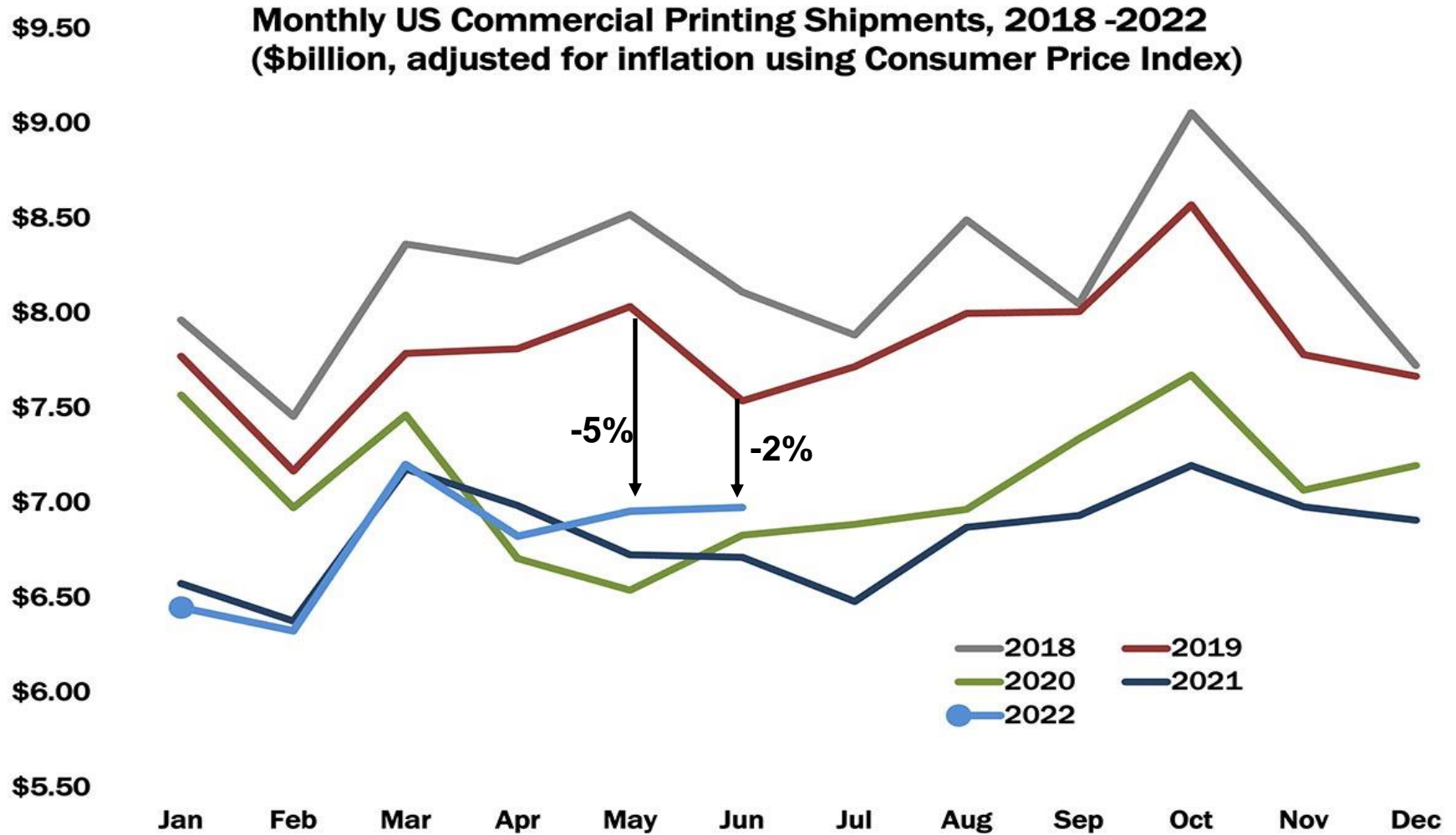


Data source: PPPC and AF&PA (shipments), US Commerce Department (trade) and Fastmarkets.

Data revised to include uncoated bristol and cotton.

THE  
BEST  
MAY &  
JUNE  
SINCE  
BEFORE  
COVID!

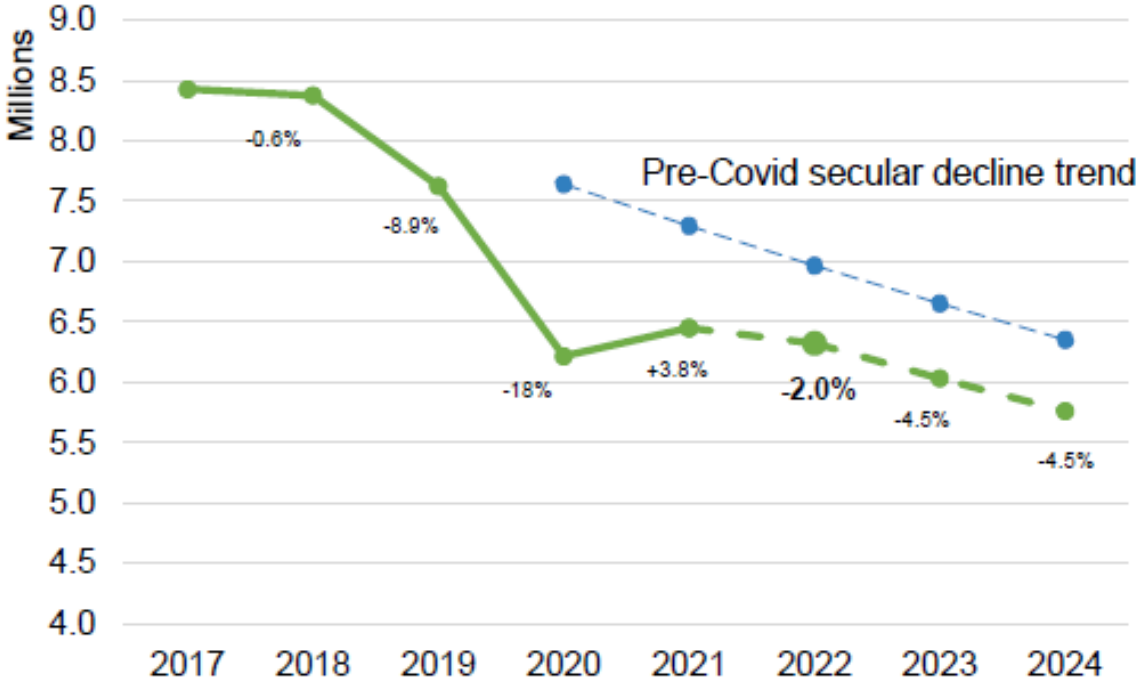
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WhatTheyTh!nk

# HOW MUCH WILL THE COMMERCIAL PRINT MARKET DECLINE, UNDER NORMAL CIRCUMSTANCES, PER YEAR FOR THE NEXT 5 YEARS?

NA Total UFS Demand



6.5 Million tons  
(rough estimate of current market)

If we decline by  
 2% = 130,000 tons per year  
 3% = 195,000 tons per year  
 4% = 260,000 tons per year  
 5% = 325,000 tons per year

Next 5 years...  
 2% decline per year = 650,000  
 5% decline per year = 1,625,000 tons

Base Case Forecast: Post 2022 recovery, secular decline trend accelerates to **-4.5%/yr.** or approximately **250,000 tpy**

# EVERY YEAR WE NEED TO LOSE A MAJOR MILL

6.5 Million tons  
(rough estimate of current market)

If we decline by

2% = 130,000 tons per year

3% = 195,000 tons per year

4% = 260,000 tons per year

5% = 325,000 tons per year

Next 5 years...

2% decline per year = 650,000

5% decline per year = 1,625,000 tons

Mill	Number of Machines	Tons ('000)
Domtar	8	2,311
Sylvamo	4	1,039
International Paper*	3	655
Pixelle Specialty	9	603
PCA	2	454
Finch	4	250
Phoenix Paper	1	209
All Others	25	953

Source: RISI

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# Uncoated Freesheet Capacity Reductions

		Annual Net Change ( <sup>'000</sup> tonnes)				
	Country	Company	Location	PPPC	Date	Comments: PPPC
2018	U.S.	Flambeau	Park Falls, WI	(90)	1Q18	Permanently shutting down PM#3
	U.S.	PCA	Wallula, WA	(75)	2Q18	Converting PM3 from UFS and C1S to a kraft linerboard machine. Will remove -75k tons of UFS and -125k tons of specialty/release liner.
	U.S.	Georgia Pacific	Camas, Washington	(235)	2Q18	Permanently shutting down P&W machine (80% cut-size; 20% MOCR)
	<b>Total 2018</b>			<b>(400)</b>		
2019	U.S.	Georgia Pacific	Port Hudson, LA	(500)	Mar-19	Permanently shutting down PM3 & PM4 to exit mill from Communications business. Stated capacity = 630k. But market intel suggests mill has been operating closer to 500k.
	U.S.	Flambeau	Park Falls, WI	(55)	Jun-19	Closed entire mill (includes PM1 & PM2)
	U.S.	Domtar	Ashdown, AR	(170)	Oct-19	Immediately closing PM63. Will convert to pulp production over next 12 months.
	U.S.	Domtar	Port Huron, MI	(34)	Nov-19	Permanently closing PM6
<b>Total 2019</b>			<b>(759)</b>			
2020	U.S.	International Paper	Selma, AL	(235)	1Q20	Converting PM#15 at Riverdale from UFS to bleached liner and containerboard
	U.S.	Domtar	Kingsport, TN	(420)	2Q20	Converting PM from UFS to Linerboard due to COVID demand destruction
	U.S.	Domtar	Ashdown, AR	(160)	2Q20	Shuttering PMs and converting to pulp production
<b>Total 2020</b>			<b>(815)</b>			
2021	U.S.	Domtar	Port Huron, MI	(33)	1Q21	Permanent closure of mill due to COVID demand destruction
	U.S.	PCA	Jackson, AL	(190)	1Q21	Shifting J-3 to 50/50 production (380k) of white papers and containerboard
	U.S.	Appvion	Roaring Spring, PA	(120)	1Q21	Permanent mill closure impacting three paper machines.
	U.S.	Midwest Paper	Combined Locks, WI	(45)	2Q21	Midwest Paper (formerly Appleton Coated) moving all UFS to brown paper production
<b>Total 2021</b>			<b>(388)</b>			

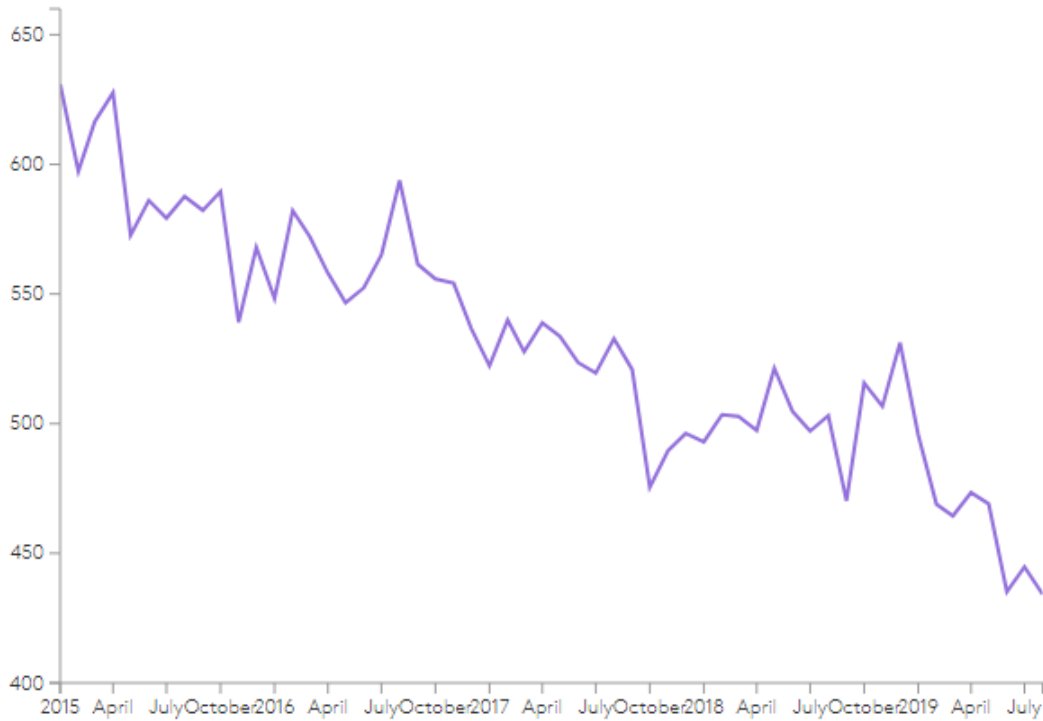
Nearly 2 Million tons of UFS papermaking capacity has been permanently closed over the past three years. An additional 388k tons has been removed in just the first six months of 2021.



# HOW MUCH WILL THE COMMERCIAL PRINT MARKET DECLINE, UNDER NORMAL CIRCUMSTANCES, PER YEAR FOR THE NEXT 5 YEARS?

US Coated Paper Demand by Month

Thousand Tons, Seasonally Adjusted



Fastmarkets  
RISI

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450,000 tons per month (5,400,000 annual tons)  
(rough estimate of current market)

If we decline by

2% = 108,000 tons per year

3% = 162,000 tons per year

4% = 216,000 tons per year

5% = 270,000 tons per year

Next 5 years...

2% decline per year = 540,000 tons




5% decline per year = 1,350,000 tons

# Coated Freesheet Capacity Reductions

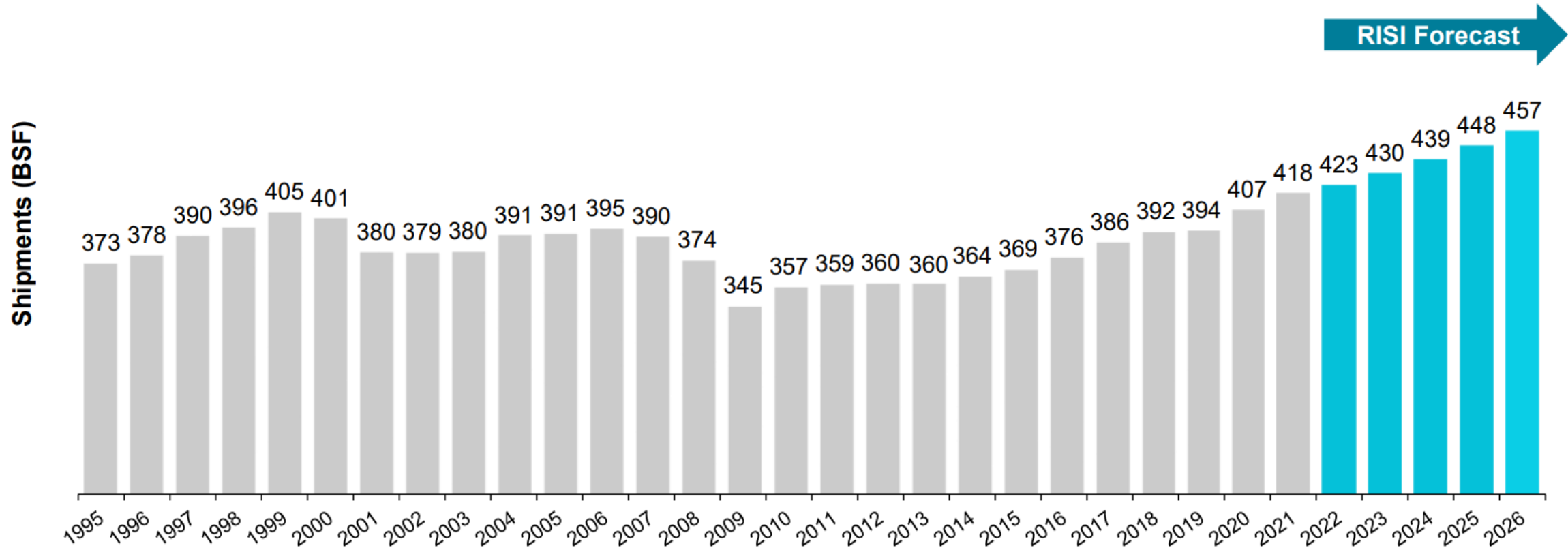
		Annual Net Change ( <sup>'000</sup> tonnes)				
	Country	Company	Location	PPPC	Date	Comments
2017	U.S.	Verso	Jay, ME	(200)	3Q17	Paper machine conversion to specialty release liners
	U.S.	Appleton Coated	Combined Locks, WI	(365)	4Q17	Receivership. Mill Closure
	U.S.	West Linn	West Linn, OR	(245)	4Q17	Mill Closure
	<b>Total 2017</b>			<b>(810)</b>		
2018	U.S.	Sappi	Somerset, ME	(260)	2Q18	Converting PM#1 from to Consumer Packaging.
	<b>Total 2018</b>			<b>(260)</b>		
2019	U.S.	Verso	Luke, MD	(450)	Jun-19	Mill closure
	<b>Total 2019</b>			<b>(450)</b>		
2020	U.S.	Verso	Wisconsin Rapids	(540)	Jul-20	Indefinitely idling mill due to COVID and structural declines
	U.S.	Verso	Duluth, MN	(270)	Jul-20	Indefinitely idling mill due to COVID and structural declines
	U.S.	Sappi	Westbrook, ME	(42)	2Q20	PM9 permanent shutdown
	U.S.	Nine Dragons	Rumford, ME	(140)	Dec-20	Conversion of R15 to LtWt. Linerboard
	<b>Total 2020</b>			<b>(992)</b>		

Several coated mills were indefinitely idled in 2020 as a result of shuttered economies and drop in demand for coated papers. Over 992k tons of capacity removed from the market, only 140k tons was the result of a paper machine conversion.

# Geographic Business Segment Operating Results | Quarterly

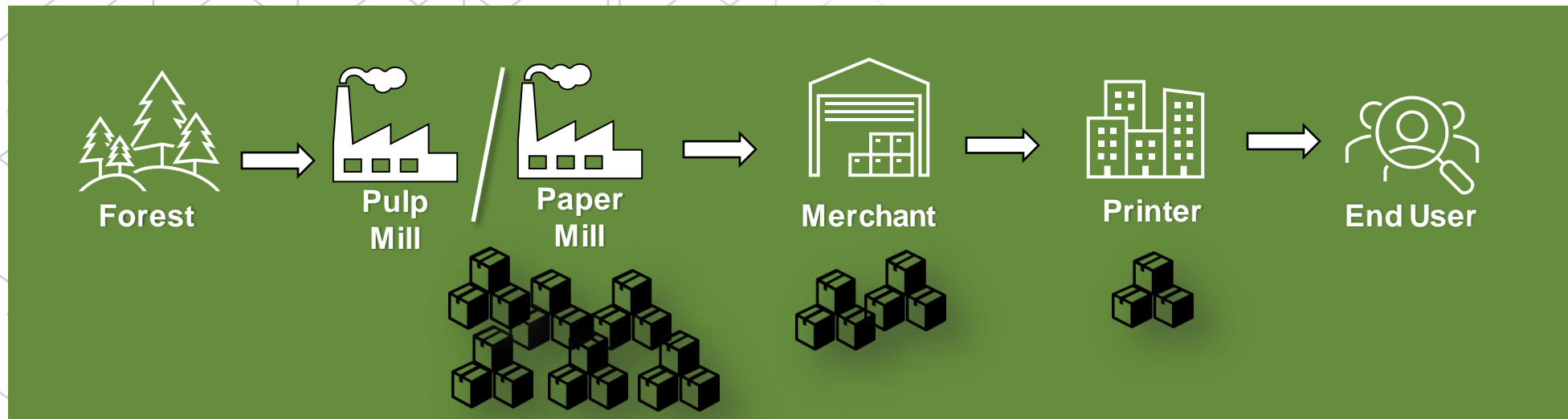
	\$ Million			Sales		D & A <sup>1</sup>	Adj. Operating Profit <sup>1</sup>		
	1Q20	4Q20	1Q21	1Q21	1Q20	4Q20	1Q21		
 <b>Industrial Packaging</b>								<b>11-13% ROS</b>	
North America	\$3,355	\$3,371	\$3,485	\$181	\$437	\$396	\$395		
Europe	\$350	\$364	\$396	\$15	\$10	\$20	\$26		
Europe Coated Paperboard	\$92	\$100	\$98	\$4	\$24	\$15	\$26		
Brazil	\$54	\$0	\$0	\$0	\$(1)	\$0	\$0		
 <b>Global Cellulose Fibers</b>									
Global Cellulose Fibers	\$568	\$582	\$581	\$64	\$(54)	\$(114)	\$(82)		
 <b>Printing Papers</b>								<b>4-6% ROS</b>	
North America	\$446	\$363	\$366	\$21	\$23	\$22	\$15		
Europe	\$287	\$248	\$250	\$9	\$41	\$21	\$22		
Brazil	\$176	\$198	\$168	\$14	\$32	\$37	\$43		

# U.S. Corrugated Packaging Shipments



# DIRTY SECRET OF THE NORTH AMERICAN PAPER INDUSTRY - INVENTORY

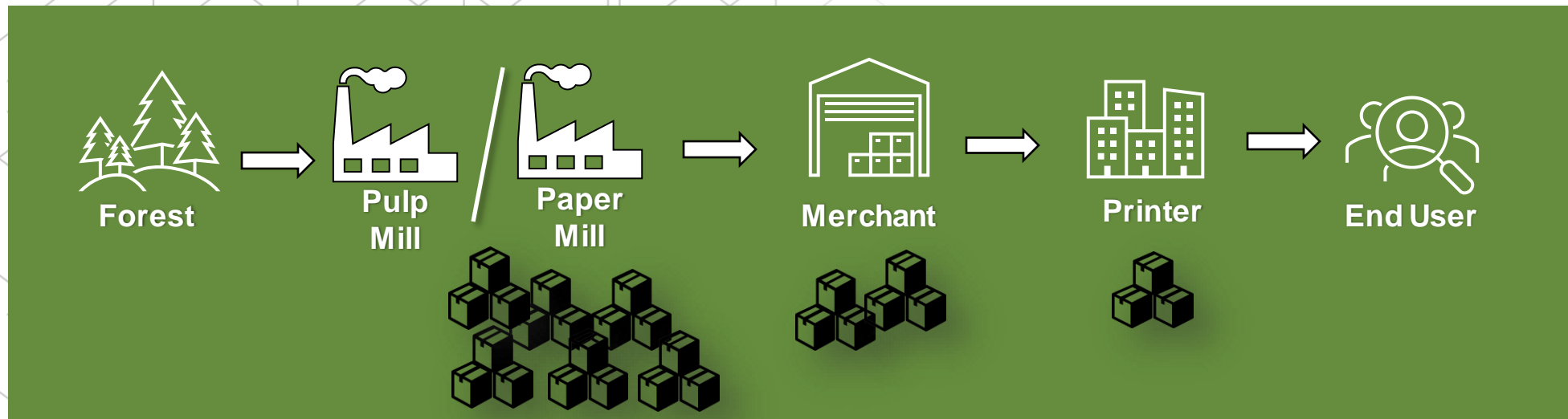
## North American Paper Industry Supply Chains



**Issues: Working Capital tied up at far end of supply chain, majority of obsolescence risk is on the mill. Prices held at lower end due to lack of alternatives to building inventory.**

# DIRTY SECRET OF THE NORTH AMERICAN PAPER INDUSTRY - INVENTORY

North American Paper Industry Supply Chains  
Plan B Emerges



**Opportunity:** Working Capital demands are lowered improves mill ROTC, forward staged inventory has greater probability of being tied to specific piece of business, so risk of obsolescence is lowered. Price stability exists as inventory is a shared responsibility.

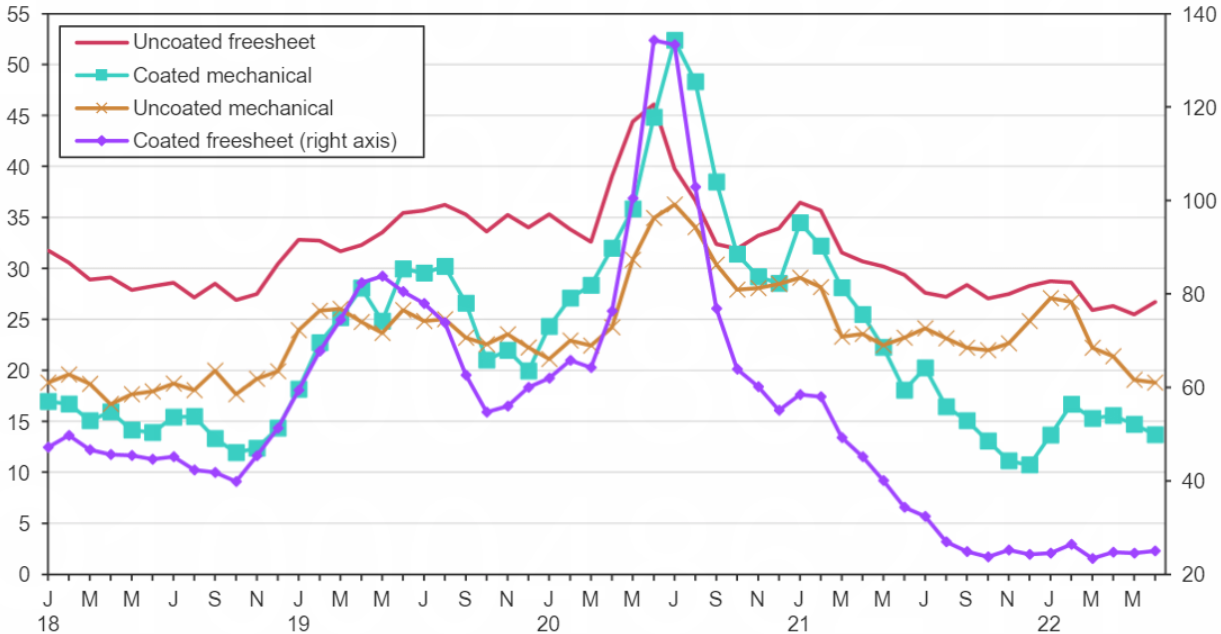
# MILL INVENTORY REMAINS AT VERY LOW LEVELS

Mid-Term elections seem to drive an additional 50,000-100,000 tons of UFS and CFS papers. 2022 Mid-term elections are likely to exceed this due to the charged political environment.

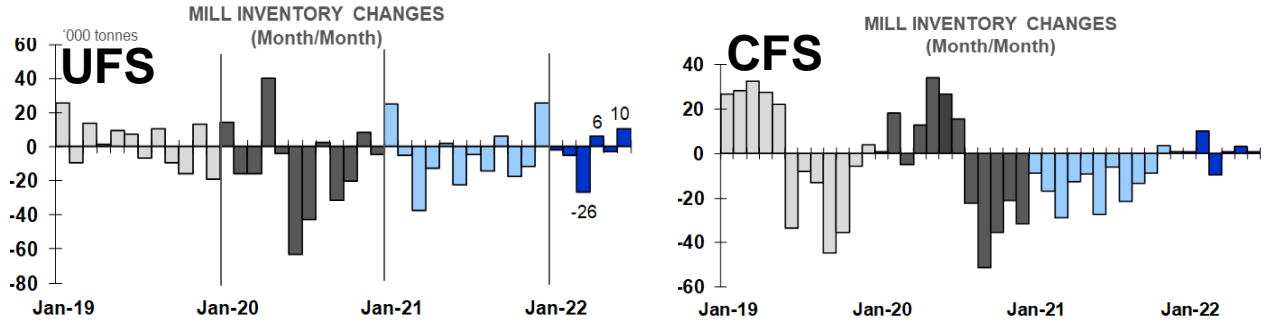
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## North American producer inventories of printing & writing papers

Days of supply



Data source: Calculated by Fastmarkets from PPPC data.



Categories > Production & Business Activity > Manufacturing > Inventories

## ★ Manufacturers' Total Inventories: Printing (A23STI)

DOWNLOAD

Observation:  
Jun 2022: **6,381** (+ more)  
Updated: Aug 3, 2022

Units:  
Millions of Dollars,  
Seasonally Adjusted

Frequency:  
Monthly,  
End of Period

1Y | 5Y | 10Y | Max

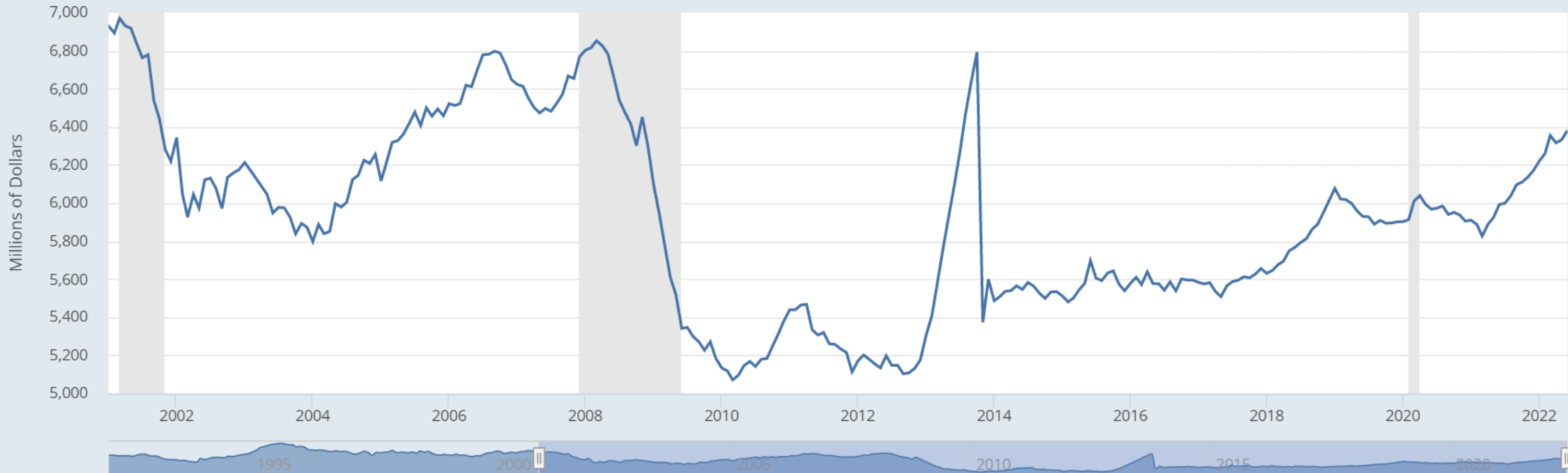
2001-01-01

to

2022-06-01

EDIT GRAPH

### FRED — Manufacturers' Total Inventories: Printing



Shaded areas indicate U.S. recessions.

Source: U.S. Census Bureau

fred.stlouisfed.org





Categories > Production & Business Activity > Manufacturing > Inventory to Shipments

## ★ Manufacturers' Inventories to Shipments Ratios: Printing (A23SIS)

DOWNLOAD

Observation:  
Jun 2022: **0.92** (+ more)  
Updated: Aug 3, 2022

Units:  
Ratio,  
Seasonally Adjusted

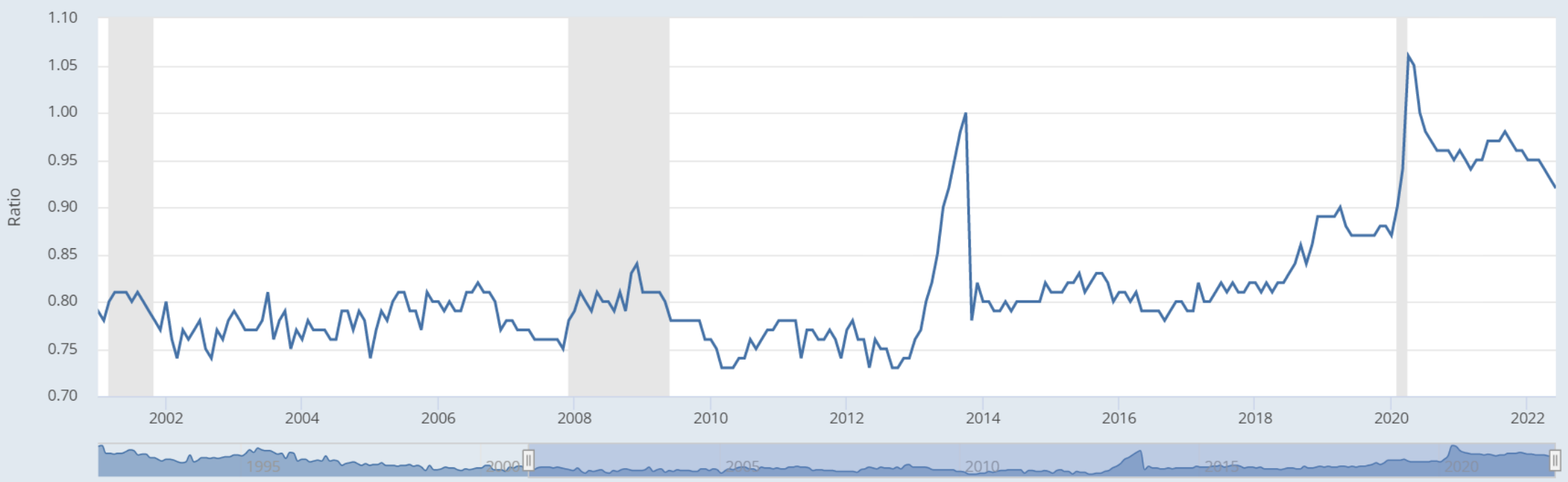
Frequency:  
Monthly

1Y | 5Y | 10Y | Max

2001-01-01 to 2022-06-01

EDIT GRAPH

### FRED — Manufacturers' Inventories to Shipments Ratios: Printing



Shaded areas indicate U.S. recessions.

Source: U.S. Census Bureau

fred.stlouisfed.org



# How Long Does this last?

## 5 key factors that will determine that ...

### 1. Imports

- European - Natural Gas Issues & Container access
- Asia – Container Cost & Domestic Demand

### 2. Demand (economic headwinds)

### 3. Inflation

### 4. Supplier Issues

- Strategic alternatives (board/brown)
- Capacity rationalization
- Suppliers still at risk

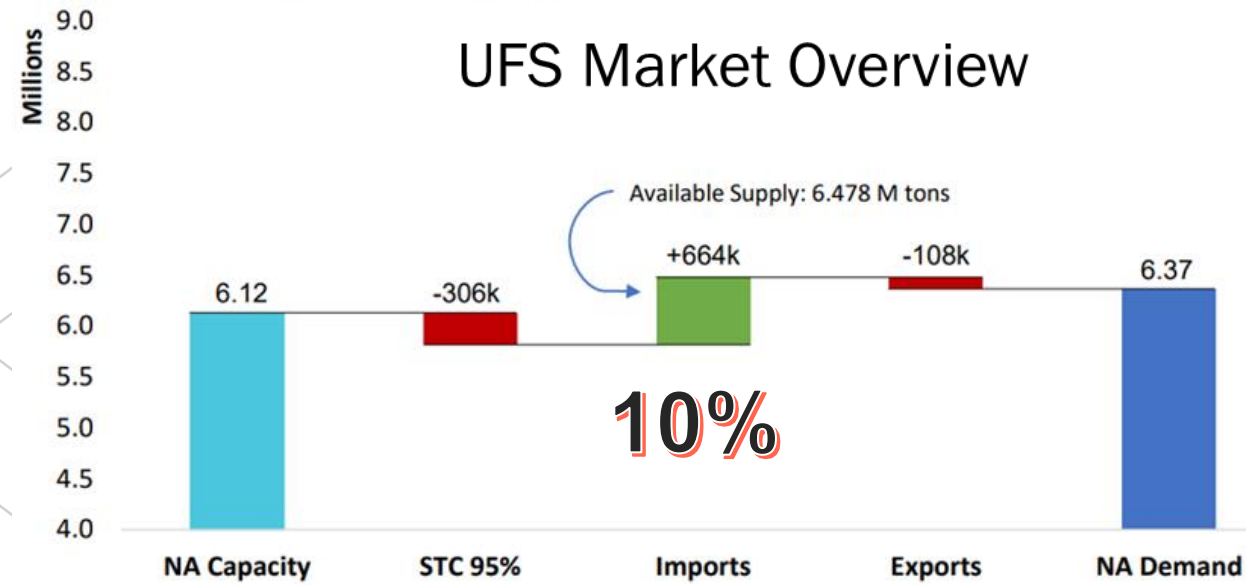
### 5. Labor

- Impacting Envelope Market
- Impacting third party converting that the industry relies on



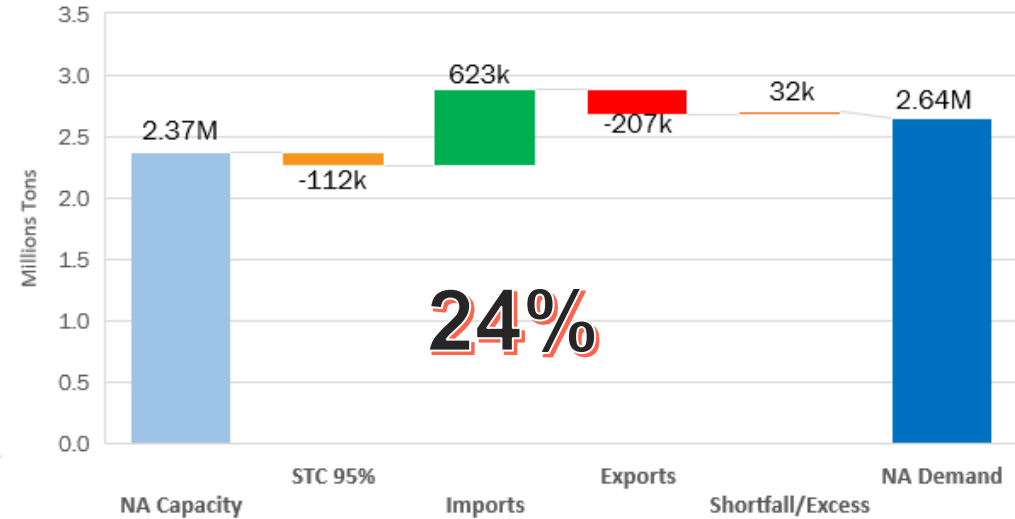
# THE NORTH AMERICAN MARKET NEEDS IMPORTS TO BALANCE OUT DEMAND REQUIREMENTS

## UFS Market Overview



	Europe	South America	Asia
	55%	31%	14%

## CFS Market Overview

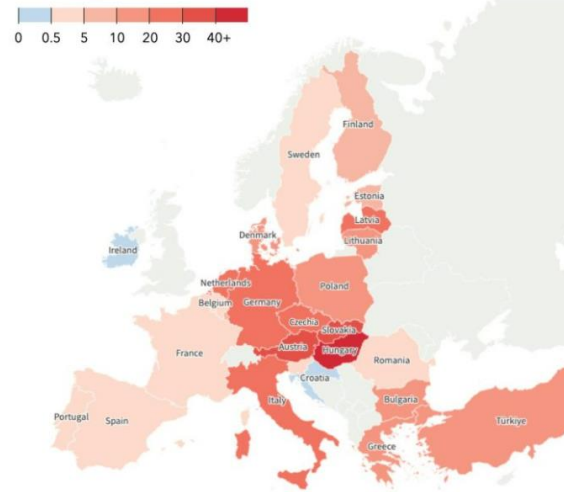


	South America	Asia	Canada
Europe	50%	0%	0%



### Russian gas dependence

(Russian gas as a share of total energy consumption, 2020, percent)



Source: IMF staff calculations.

## 3 charts show Europe's unprecedented natural gas crisis

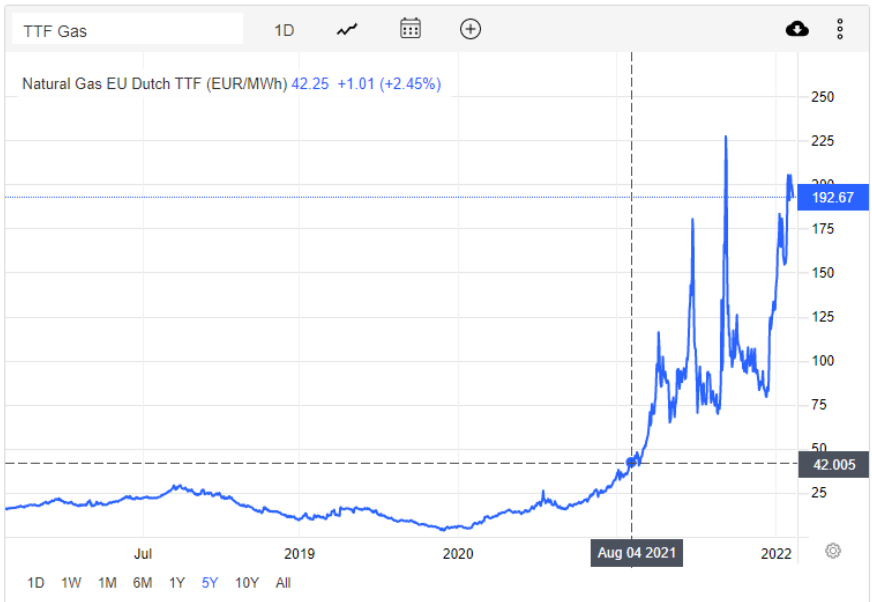
PUBLISHED MON, AUG 1 2022 4:42 AM EDT | UPDATED TUE, AUG 2 2022 6:15 AM EDT

Silvia Amaro @SILVIA\_AMARO

SHARE f t in e

### KEY POINTS

- Last week, supplies via Nord Stream 1 were reduced to 20% with Gazprom citing technical issues.



Natural Gas Prices in Europe will drive costs

## Global Freight Challenges

- West Coast Port Labor Agreement expired July 1<sup>st</sup>
- It involves 29 West Coast ports and 22,400 workers!
- Automation & productivity improvements are a key sticking point. West coast ports are some of the least efficient in the industry!
- Calif AB5 also impacting independent truckers which will impact port productivity as well!
- Relocated freight from West to East is creating unintended consequences. Volumes are now up as much as 192% in the East!
- The movement to the East is causing freight to sit in containers an average of 13 days longer (25 days to West coast vs 38 to East). Tying up capacity.
- Concerns over rail line mismatch as railways cannot adjust to the volume movement like truck capacity can. Union Pacific in West versus CSX and Norfolk & Southern in the East.

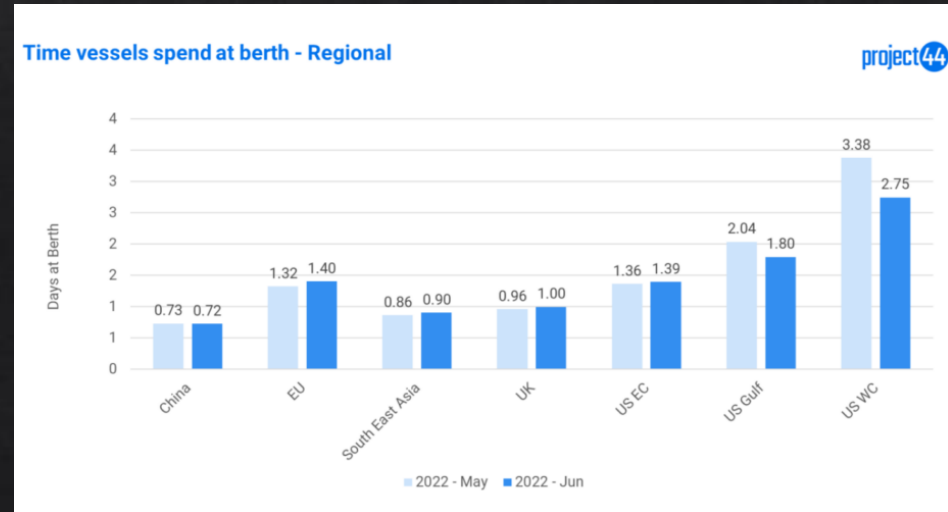
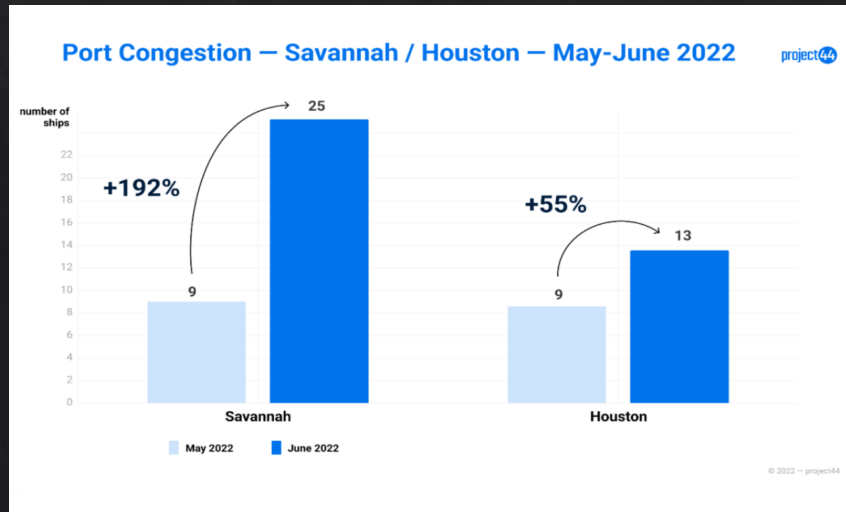


### Spot freight rates by major route

Our assessment across eight major East-West trades:



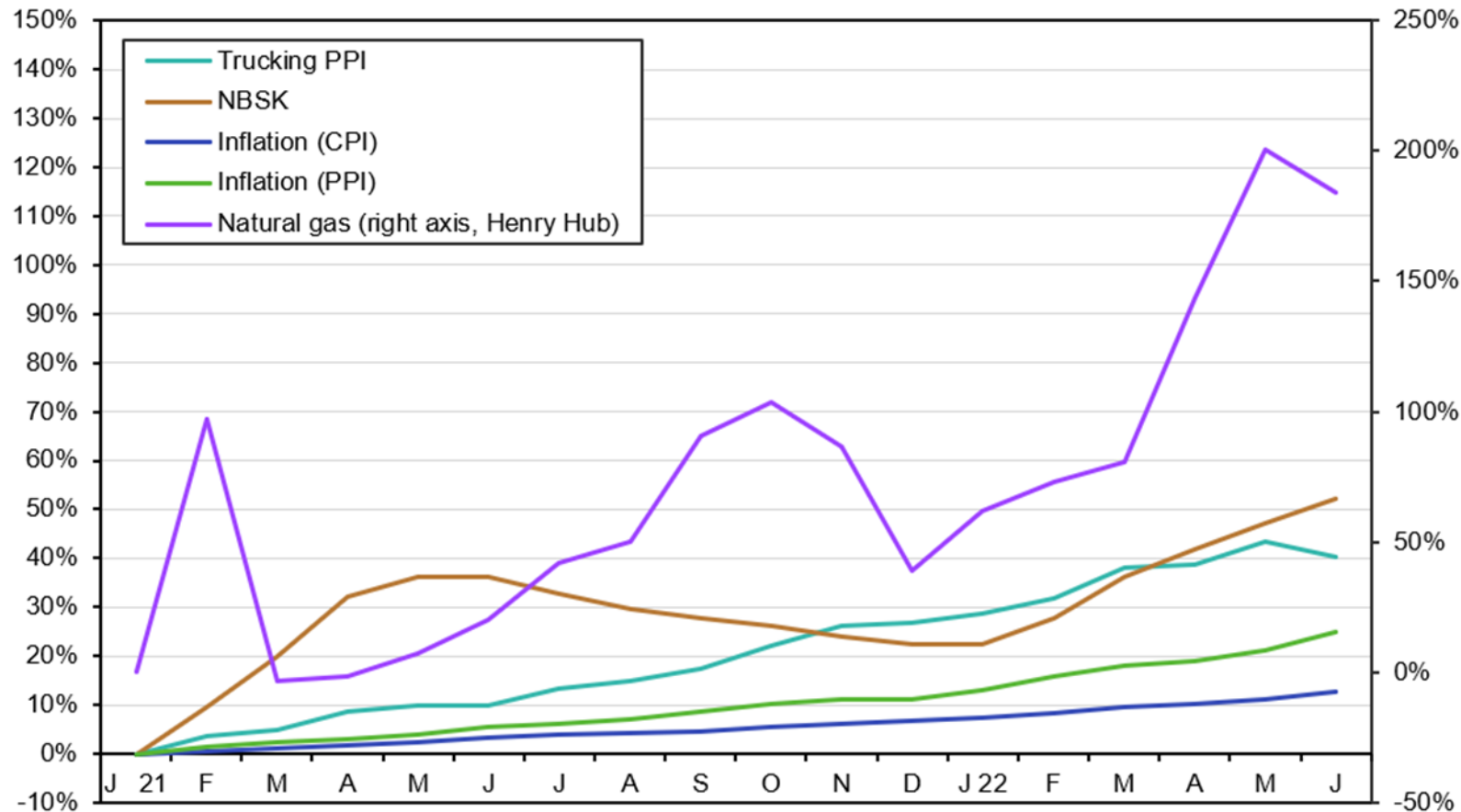
Route	28-Jul-22	4-Aug-22	11-Aug-22	Weekly change (%)	Annual change (%)
Composite Index	\$6,762	\$6,628	\$6,430	-3% ▼	-32% ▼
Shanghai - Los Angeles	\$7,199	\$6,985	\$6,834	-2% ▼	-34% ▼
Rotterdam - New York	\$6,921	\$6,939	\$6,945	0%	9% ▲





# North American Paper Industry Cost Drivers

US input cost inflation  
Percentage change versus January 2021

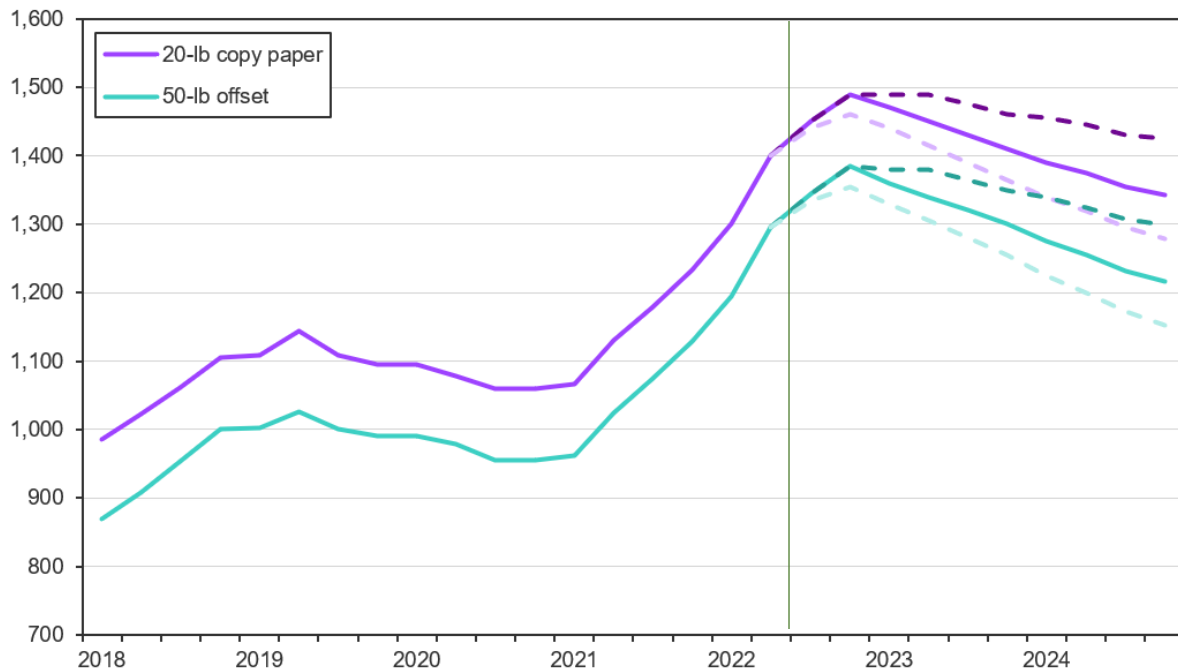


Data source: Fastmarkets RISI, US Federal Reserve.

# UFS & CFS Pricing Forecasts 2023-24

## US uncoated freesheet price forecasts and variance scenarios

US dollars per ton

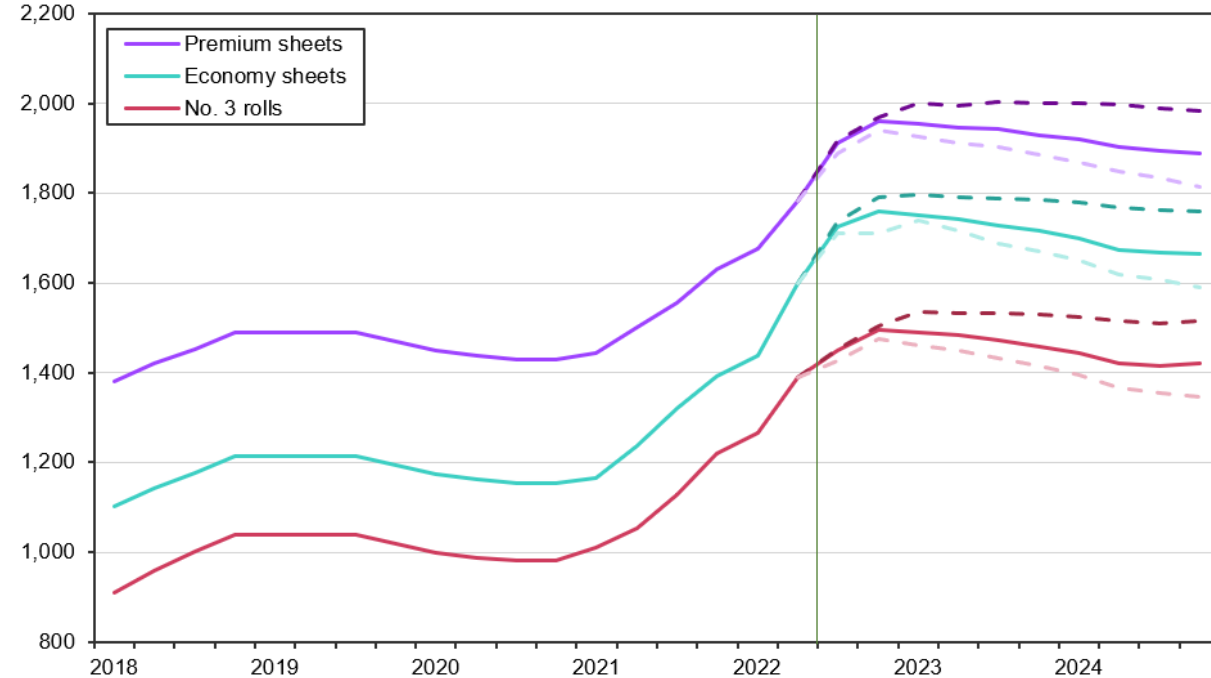


Data source: Fastmarkets RISI estimates.

1- Price Increase 2H of '22  
Price Stability thru Q1 of '23, then softens

## US coated freesheet price forecasts and variance scenarios

US dollars per ton



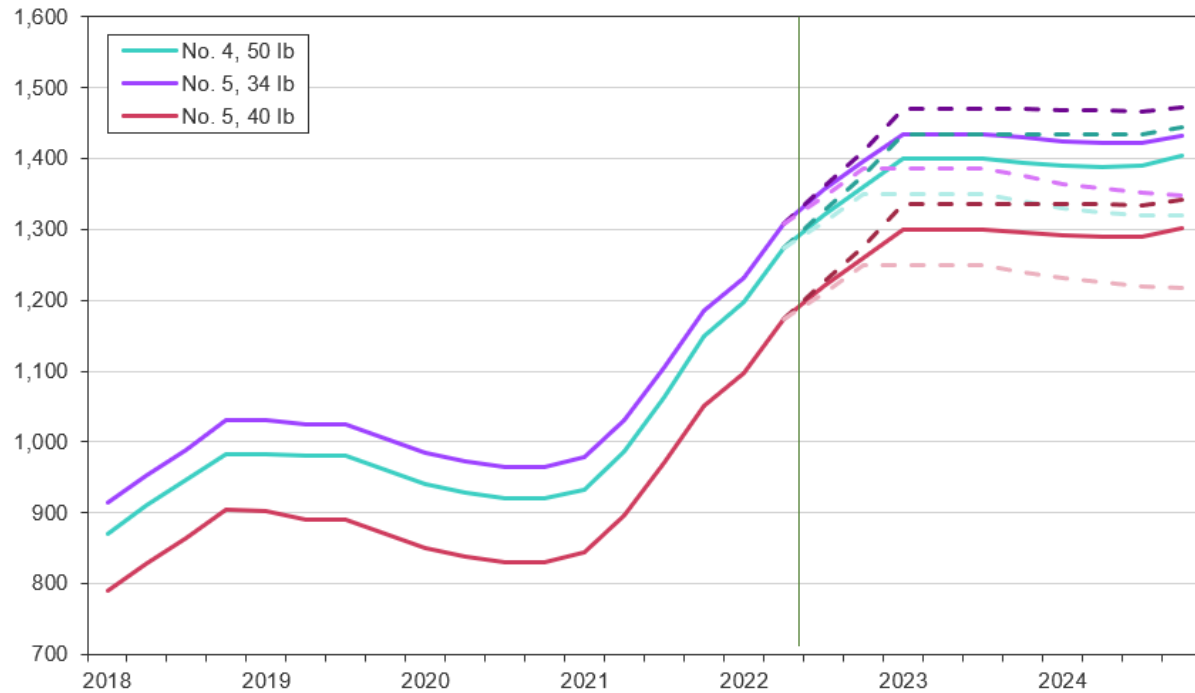
Data source: Fastmarkets estimates.

2- Price Increases 2H of '22  
Price Stability into Q2 of '23

# CM & UM Pricing Forecasts 2023-24

## US coated mechanical price forecasts and variance scenarios

US dollars per ton

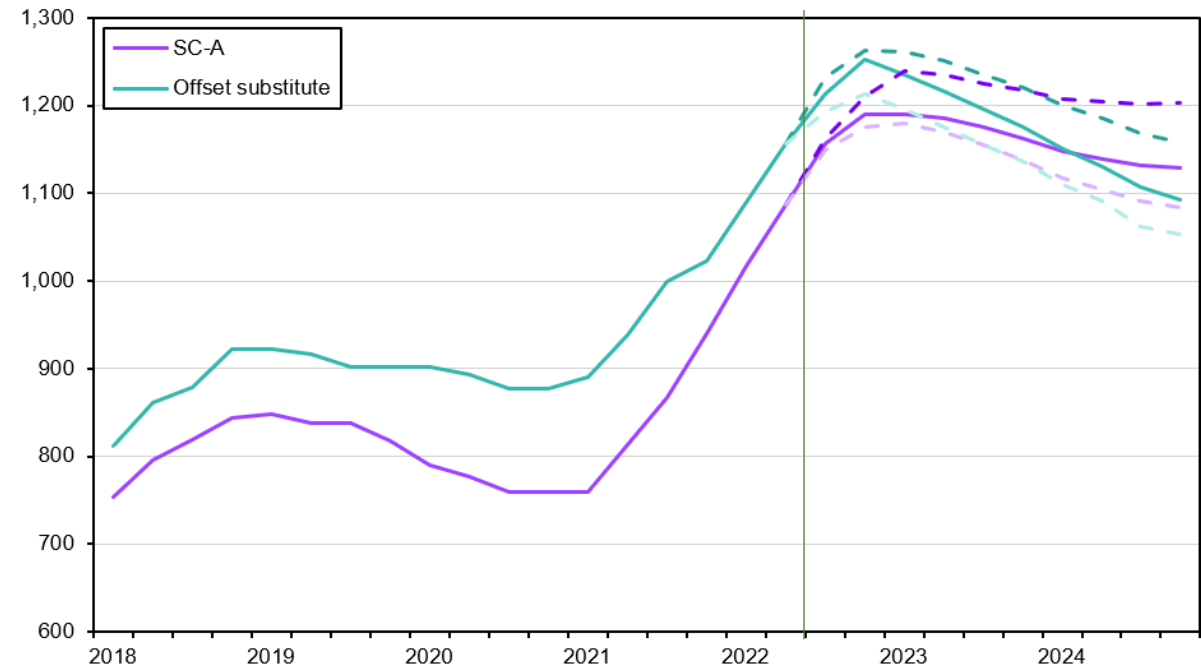


Data source: Fastmarkets estimates.

2- Price Increases 2H of '22  
Price Stability in '23

## US uncoated mechanical price forecasts and variance scenarios

US dollars per ton



Data source: Fastmarkets estimates.

2- Price Increases 2H of '22  
Pricing Softens in '23



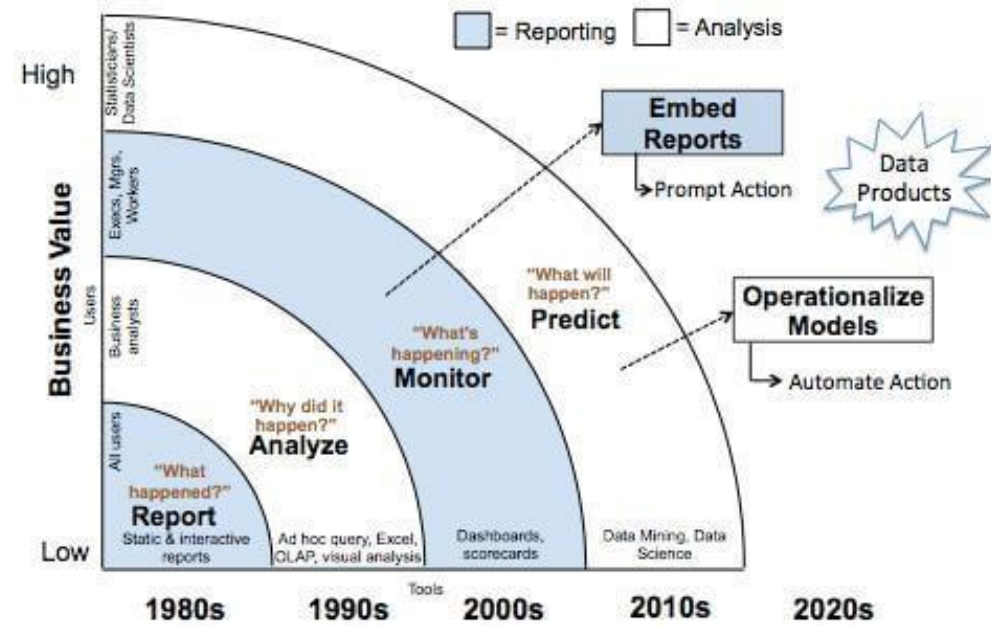
# 5 Biggest Supply Chain Trends

- 1) Technology
- 2) Environmental Sustainability
- 3) Durability of Supply Chain Links
- 4) Partnerships
- 5) Transportation



# KEY TREND #1: TECHNOLOGY

1. Automation to overcome labor shortages
2. Data > Information > Streamlined Decisions > Faster Market Response
3. Integrated data
  - System to system integrated to reduce cost of clerical updates
4. Omni channel experience



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ONE PLATFORM. ANY PROCESS.





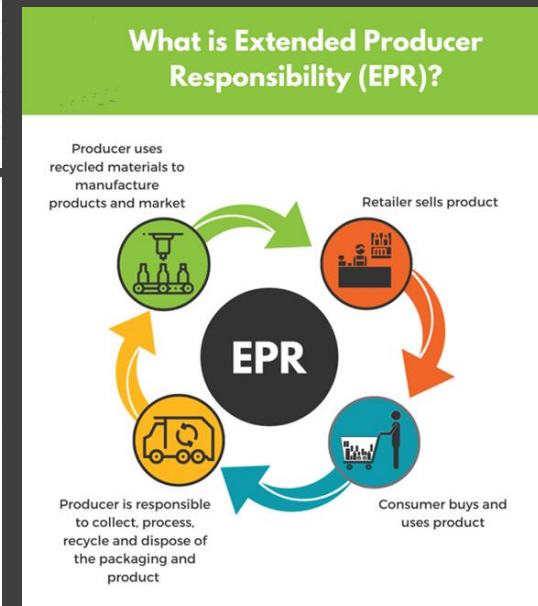
# Key Trend #2: Environmental Sustainability

- Carbon footprint is known and shared
- Supplier Sustainability Scorecards
- Reduction in fossil fuel vehicles
- Extended Producer Responsibility

**Quinnesecc**

The Quinnesecc Mill has the capacity to produce approximately 430,000 tons of graphic paper per year used primarily in marketing applications, including magazines, catalogs and commercial printing. The mill also produces 240,000 tons of Northern Bleached Hardwood Kraft (NBHK) pulp used in printing, writing, specialty and packaging paper, facial and toilet tissue, and paper towels.

		Average
<b>Efficient use and conservation of raw materials</b>		
Total Energy Use	22.42 GJ/MT	23.64
% Renewable	86% Renewable / Total Energy Use	74.17
Wastewater Discharge	43.7 M3/MT	44.30
Solid Waste	48.95 kg Solid Waste/MT	29.01
Environmental Management System	3 of 3	2.83



# Key Trend #3: Durability of Supply Chain Links

- Do you know your partners' long-term vision for themselves, what risks do they see, are they working to ride it out or reinvent for longevity?
- What inherent risks does their model have?
  - Raw Materials
  - Transportation
  - Labor
  - Environmental Sustainability
  - Do they have a financial Right to Win?
- Who are your suppliers' suppliers?
- Supplier Sustainability Scorecard (including cyber security)

## Supply chain attacks, by the numbers

**700**

organizations were affected by third-party/supply chain compromises in 2020

**42 million**

individuals impacted by third party/supply chain compromises in 2020

**39%**

of global business leaders believe supply chain partners pose a high/somewhat high risk to their organization

**43%**

of leaders who report no confidence in their ability to prevent third-party cyber threats

**430%**

increase in attacks against the software supply chain between 2019 and 2020

Number of U.S. job openings per unemployed person



Source: Labor Department

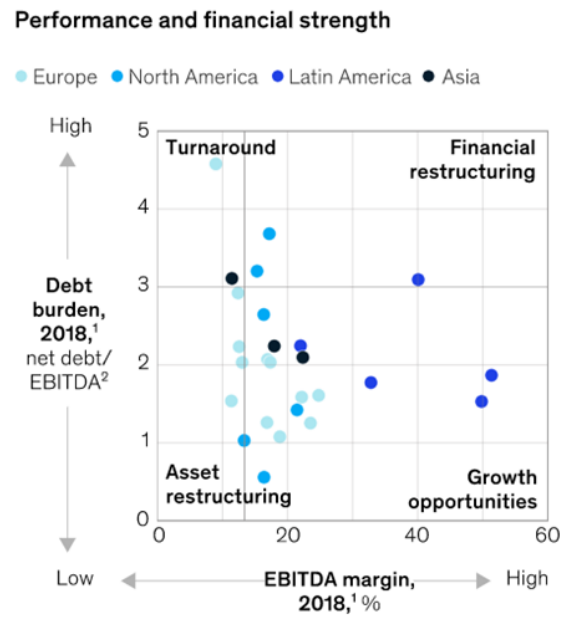


# Key Trend #4: Partnerships

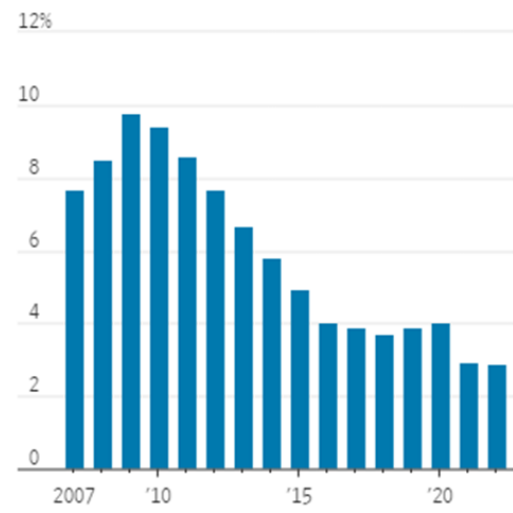


- Fewer / more concentrated by segment
- Global scale in nature
- System integration provides visibility to entire supply chain
- Advanced forecasting and supply agreements in place, more contract less spot demand
- Downstream converting will remain a challenge (labor availability, fixed cost absorption, scale is needed)

Pulp-and-paper companies are building up significant muscle for structural actions and further growth.



Annual average vacancy rate for U.S. industrial real estate

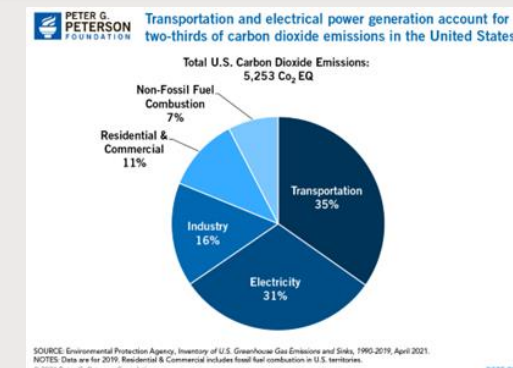
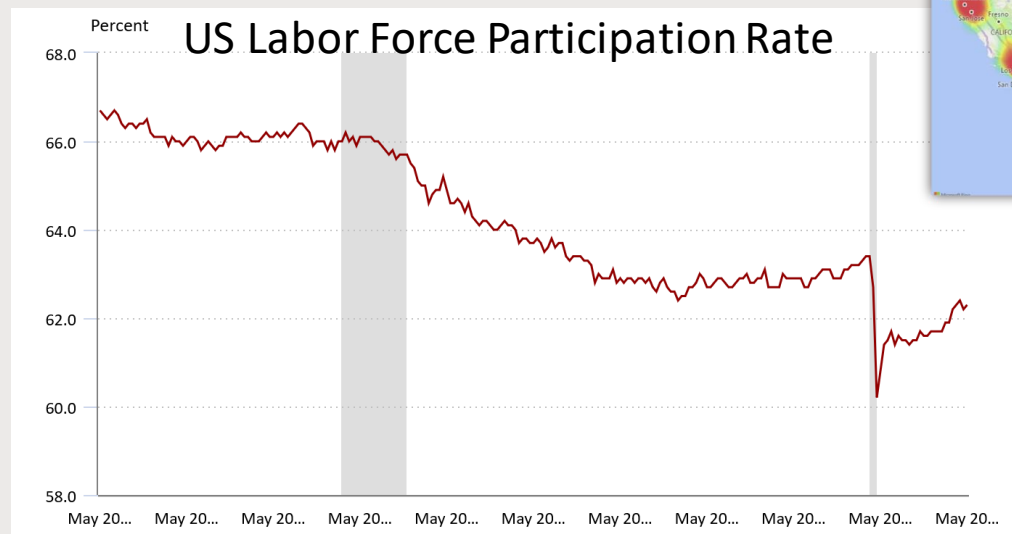
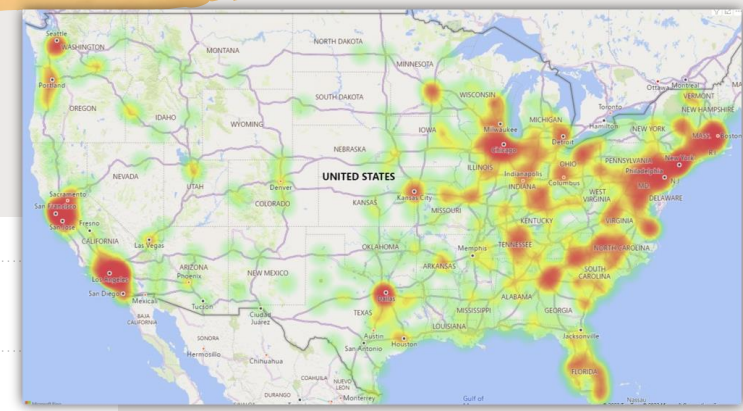


Note: Vacancy rate for 2022 is through June 30. Source: CBRE



# Key Trend #5: Transportation

- Long term driver availability
- Carbon footprint – tax??
- Cost to operate last mile
- Liability issues with owning/operating fleet
- Cameras & GPS everywhere!



# Wrap Up/Conclusion

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1. Demand will exceed domestic capacity for next 18+ months. This means we will require imports
2. Imports will be challenged due to global economic issues (European energy crisis)
3. Expect more price increases from European imports this winter as energy issues persist and reach new crisis levels
4. Asian imports may be answer but supply chain costs still very high and not easing (Zero-Covid policy & a resurgent Chinese economy could cause issues here)
5. Sustainability will play a bigger role in future (carbon footprint, energy platform)
6. Technology will be required to manage & monitor supply chains efficiently
7. Labor will continue to be a challenge and will affect service / selection (special sizes, digital, cartons)

# Thank You

## Questions?

