

What's Next For Molded Fiber Packaging?

Opportunities in a Sustainability-Driven Market

Introduction





Freedonia
Research

Economic Outlook



Overall Economic Environment

Economic growth is expected to be fairly sluggish in 2025, particularly in larger economies.



Global GDP Growth

(million US 2022\$)

	23/22	24/23	25/24
World	3.1%	3.0%	3.2%
North America	2.5%	2.2%	1.8%
United States	2.5%	2.3%	1.8%
Mexico and Canada	2.4%	1.7%	1.9%
Central and South America	1.8%	1.5%	2.7%
Western Europe	0.5%	0.8%	1.5%
Eastern Europe	2.3%	2.8%	2.4%
Africa/Mideast	2.7%	2.9%	3.8%
Asia/Pacific	4.7%	4.3%	4.3%
China	5.1%	4.5%	4.1%
Japan	1.9%	0.6%	1.0%
India	7.8%	6.6%	6.6%
Other Asia/Pacific	3.2%	3.8%	4.1%

Source: Freedonia Custom Research

Market Environment – North America

Modest economic growth is expected through 2028.

- In North America, all three countries will see modest economic growth through 2028—although near term growth will be slower.
- Canada will have slower GDP growth but will continue to have solid PCE growth. The country has seen weaker growth in capital investment and declines in manufacturing value-add.
- The Mexican economy should see a boost in growth based on onshoring trends that will boost manufacturing.

North America - Economic Overview

(billion 2022 US\$)

	2018	2023	2028	CAGR	
				23/18	28/23
Real GDP	29,110	31,950	35,190	1.9%	2.0%
Canada	2,246	2,406	2,615	1.4%	1.7%
Mexico	3,044	3,148	3,495	0.7%	2.1%
United States	23,820	26,396	29,080	2.1%	2.0%
Personal Consumption Expenditures	19,480	21,780	23,930	2.3%	1.9%
Accommodations & Foodservice VA	742	771	854	0.8%	2.1%
Food & Beverage MVA	504	539	578	1.3%	1.4%

Source: Freedonia Research



Market Environment – Europe

Economic growth will be modest across Europe.

- Europe faces many economic challenges. GDP growth will be very weak in Western Europe through 2028. This is particularly true in the larger economies—Germany, France and the UK.
- The ongoing war between Russia and Ukraine disrupted energy markets. Higher prices for natural gas in Western Europe has reduced the international competitiveness of manufacturing operations.
- The war has also had a significant impact on the formerly robust Eastern European market.

Europe - Economic Overview

(billion 2022 US\$)

	2018	2023	2028	CAGR	
				23/18	23/18
Real GDP	35070	37080	40130	1.1%	1.6%
Western Europe	25030	26260	27970	1.0%	1.3%
Eastern Europe	10040	10820	12160	1.5%	2.4%
Personal Consumption Expenditures	18529	19344	20755	0.9%	1.4%
Accommodations & Foodservice VA	755	769	821	0.4%	1.3%
Food & Beverage MVA	591	631	692	1.3%	1.8%

Source: Freedonia Research



Market Environment – Asia/Pacific

India has become the main economic driver of the region.

- China is seeing a deceleration in its economy. While household spending will remain strong, the economy will feel the effects of an overall drag in the construction sector.
- India, while not nearly the size of China, has become the major driver of growth in the region. PCE growth will be very strong through 2028.
- Japan (as well as South Korea) will continue to see stagnant growth while smaller economies such as Vietnam and Indonesia will see stronger growth.

Asia-Pacific - Economic Overview

(billion 2022 US\$)

	2018	2023	2028	CAGR	
				23/18	28/23
Real GDP	61,100	73,150	89,850	3.7%	4.2%
China	25,023	31,822	38,830	4.9%	4.1%
India	10,323	12,787	17,410	4.4%	6.4%
Japan	5,937	5,982	6,210	0.2%	0.8%
Other	19,817	22,559	27,400	2.6%	4.0%
Personal Consumption Expenditures	29,940	35,690	44,050	3.6%	4.3%
Accommodations & Foodservice VA	1,222	1,345	1,648	1.9%	4.1%
Food & Beverage MVA	1,523	1,754	2,113	2.9%	3.8%

Source: Freedonia Research



Market Environment – Central/S. America

Political instability will continue to limit growth.

- Growth in Central/South America has stagnated due to political instability, particularly in Venezuela.
- Brazil, once a breakout market, will continue to see growth that hovers around 2% per year.

Central & South America - Economic Overview

(billion 2022 US\$)

	2018	2023	2028	CAGR	
				23/18	28/23
Real GDP	9,090	9,690	10,950	1.3%	2.5%
Brazil	3,659	3,983	4,420	1.7%	2.1%
Other C&S America	5,431	5,707	6,530	1.0%	2.7%
Personal Consumption Expenditures	5,754	6,216	6,935	1.6%	2.2%
Accommodations & Foodservice VA	277	282	322	0.4%	2.7%
Food & Beverage MVA	270	278	313	0.6%	2.4%

Source: Freedonia Research



Market Environment – Africa/Middle East

The region will continue to see solid growth.

- The Africa/Mideast region will see a boost of growth as weather issues affected its constituent economies in 2023.
- In the Middle East, regional economic growth will generally stagnate. Turkey, the largest economy in the region, will have very modest growth through 2028.

Africa/Mideast - Economic Overview					
(billion 2022 US\$)					
	2018	2023	2028	CAGR	
				23/18	28/23
Real GDP	17,260	19,600	23,180	2.6%	3.4%
Sub-Saharan Africa	5,151	5,787	6,986	2.4%	3.8%
Mideast & North Africa	12,109	13,813	16,194	2.7%	3.2%
Personal Consumption Expenditures	9,417	11,420	13,330	3.9%	3.1%
Accommodations & Foodservice VA	269	322	370	3.6%	2.8%
Food & Beverage MVA	438	478	565	1.8%	3.4%

Source: Freedonia Research





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Molded Fiber: A New Trajectory

Molded Fiber Competitive Landscape

Molded fiber competes primarily with polystyrene foam (EPS), thermoformed plastic, and paperboard products.

Plastic is deeply entrenched in modern society, making it difficult to replace.

However, recent challenges to plastic's leadership have opened up opportunities for molded fiber to expand its market position.



baskets, tills, & punnets
webstaurantstore.com



clamshells
webstaurantstore.com



egg cartons
webstaurantstore.com

What has changed since 2015?

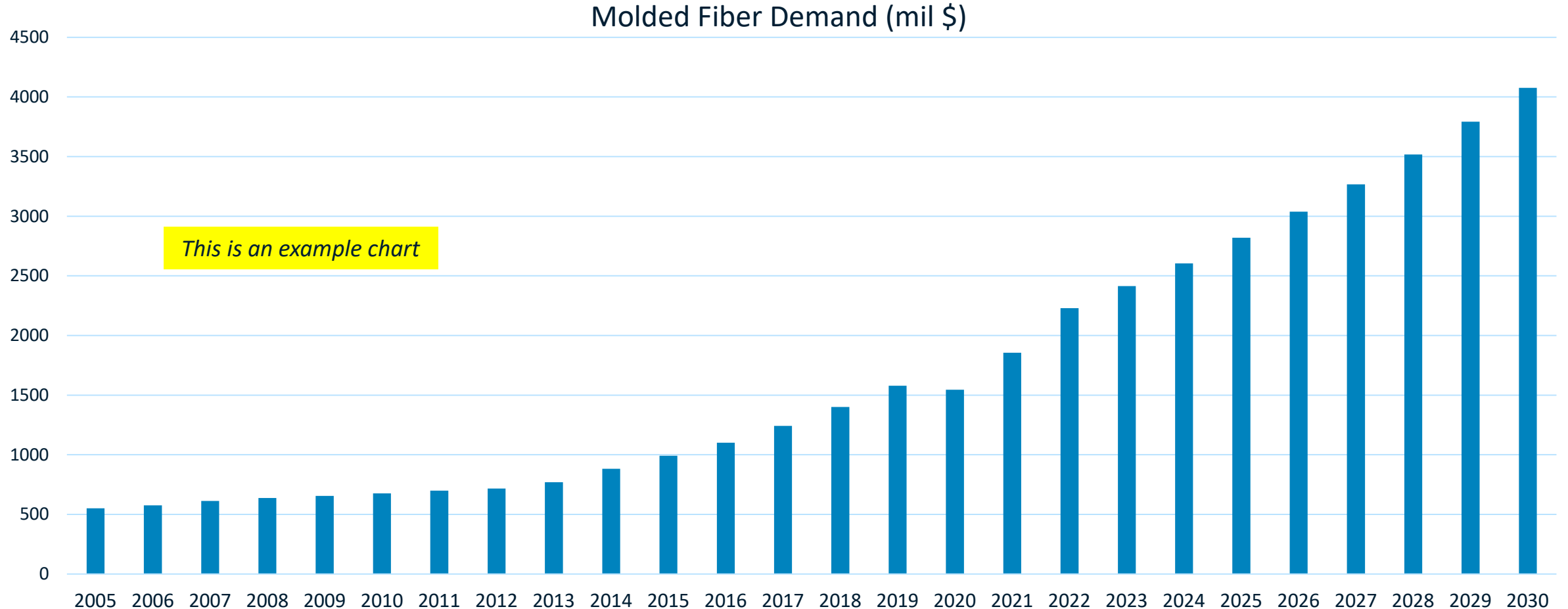
Plastic is starting to lose market share in several areas, largely due to shifts in consumer preferences, regulatory changes, investor pressure, and advancements in the production, performance, and quality of alternative materials like molded fiber.

Changes over the last decade that are expanding opportunities for plastic alternatives include:

- **Increased Environmental Awareness**
- **Regulatory Pressure**
- **Technological Advancements**
- **Corporate Sustainability Goals**



US Molded Fiber Market: A New Era?



Opportunities for Molded Fiber

Foodservice Take Out Containers



Protective Packaging



Multi-Pack Beverage Carrier Rings



Egg Cartons



Retail Food Trays



New & Pending Innovations



2024 US Molded Fiber Products

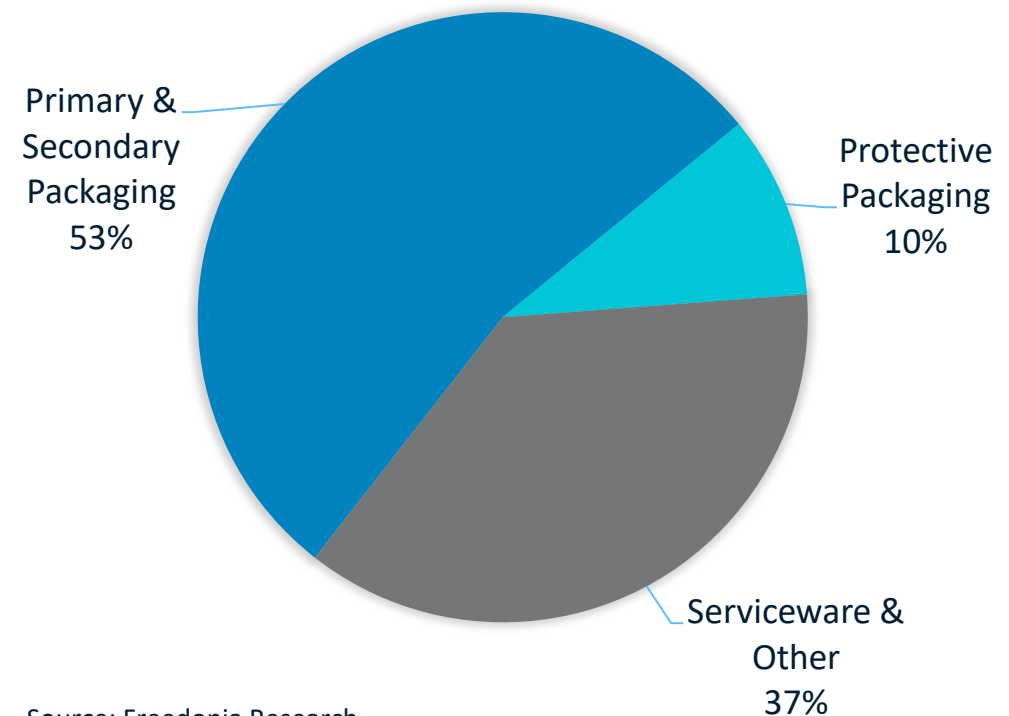
Primary & Secondary Packaging: Cups, Egg Cartons, Clamshells, Two Piece Containers, Trays/Flats, Bowls, Baskets

Serviceware/Tableware: Dinnerware (plates and bowls), Cafeteria Trays, Beverage Carriers, Food Prep Trays, Cutlery, Straws

Protective Packaging: Tray inserts, End Caps, Shippers, Pallets, Cradles, Corner Guards, Void Fill

Other: Plant Pots, Medical Supplies (Bed Pans, Bottles, Basins), Gift Boxes, Shoes Inserts

2024 Molded Fiber Demand by Product
(mil \$)



Source: Freedonia Research

2024 US Molded Fiber Markets

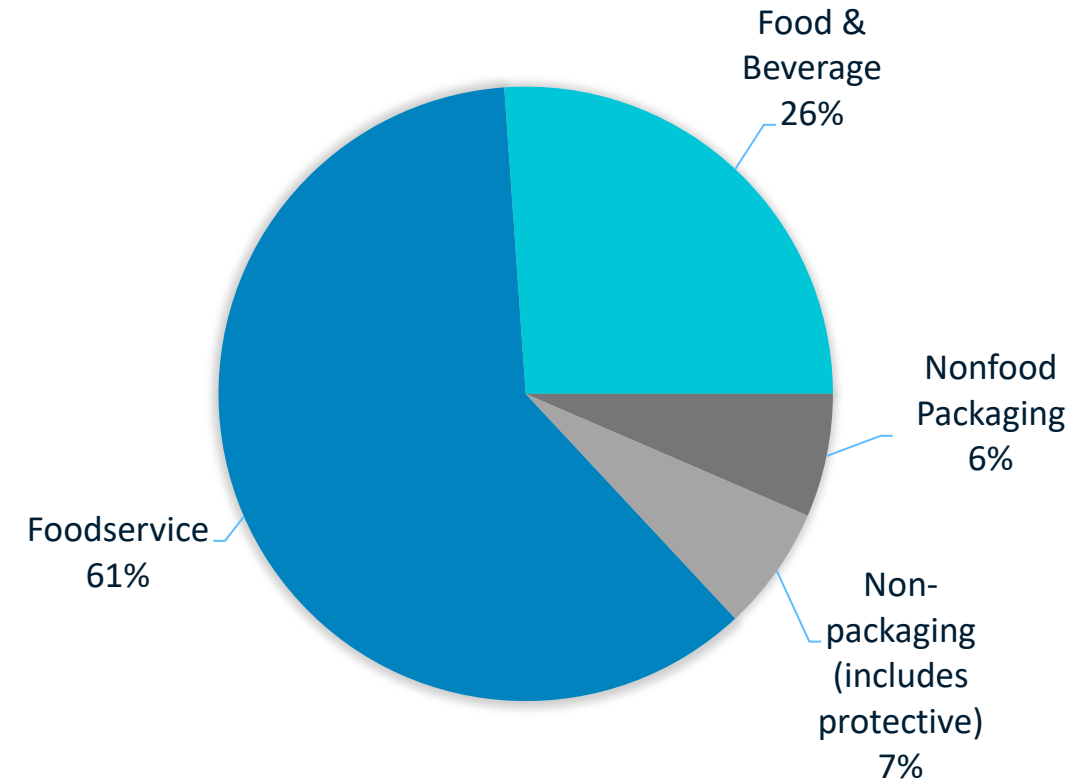
Foodservice: Disposables for restaurants and noncommercial foodservice including sports and entertainment venues, hospitality, schools, hospitals, and catering. Includes beverage disposables, dinnerware, food packaging

Food & Beverage Packaging: Packaging sold to food and beverage manufacturers for product packaging. Includes egg cartons, trays, containers, cups, baskets, other

Nonfood Packaging: Packaging sold to other product manufacturers including both durable and nondurable goods. Includes product packaging and protective packaging

Non-Packaging: Examples are plant pots, bed pans, clothing hangers

2024 Molded Fiber Demand By Market
(mil \$)



Source: Freedonia Research

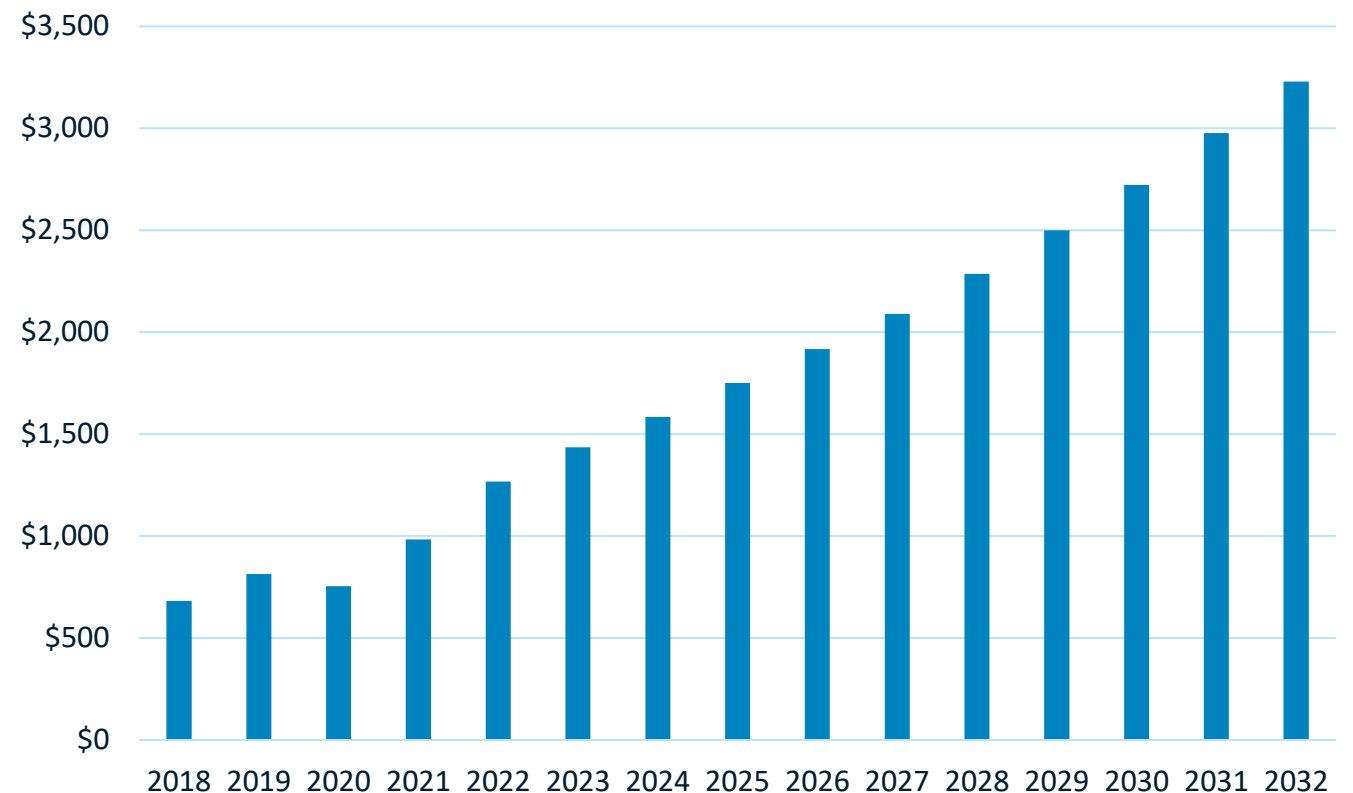
Foodservice: Disposability Done Better



US Molded Fiber Foodservice Disposable Demand

- Demand for single-use foodservice products made from molded fiber is forecast to increase 10% per year to \$2.3 billion in 2028.
- Growth will be driven by:
 - the continued introduction of new and improved fiber products
 - expanding use of non-wood fiber materials
 - the penetration of new foodservice applications
 - more competitive pricing
- Molded fiber is taking market share from both plastic and paper products.

US Molded Fiber Foodservice Disposables Demand
(mil \$)

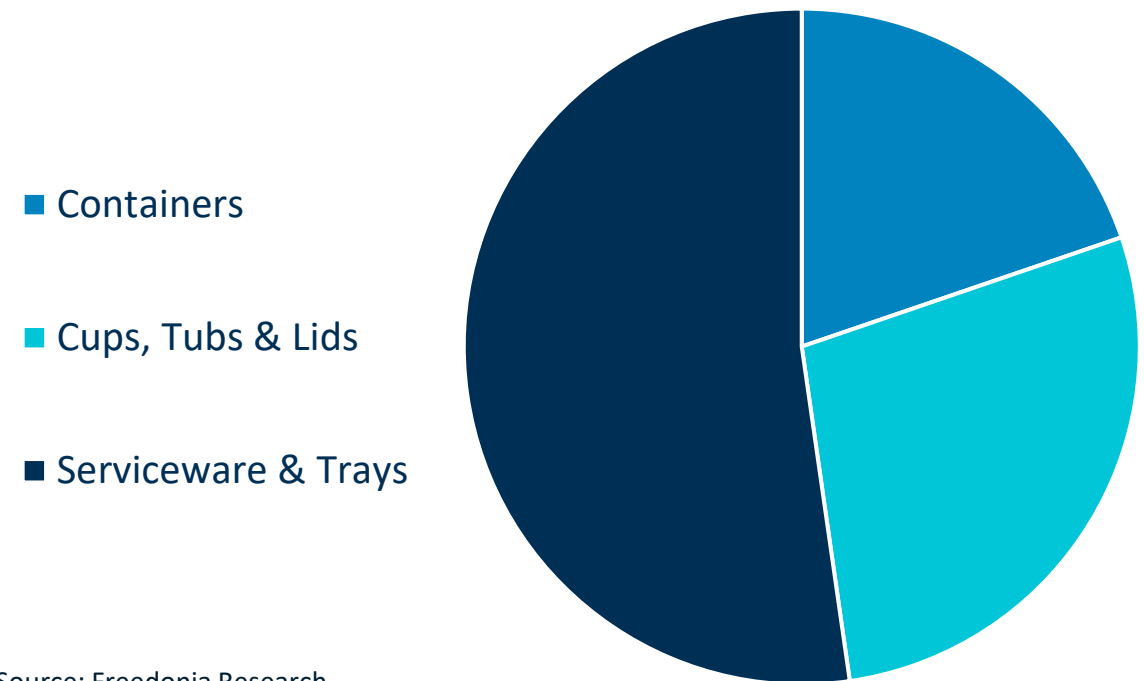


Source: Freedonia Research

US Molded Fiber Foodservice Disposable Demand

- **Serviceware & trays** currently account for the largest share of demand due to the strong position of molded fiber plates, trays and beverage carriers
- Containers including **clamshells & two piece containers** benefit from carryout uses
- Fastest growth expected in food & beverage cups

Molded Fiber Disposables Demand by Type
(mil \$)

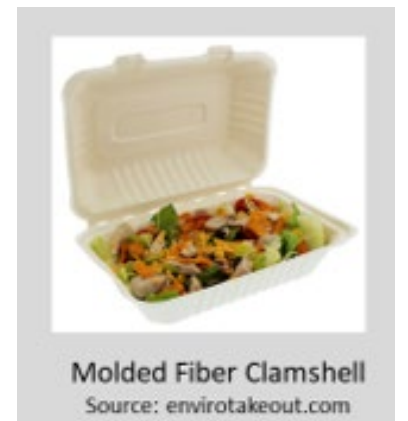
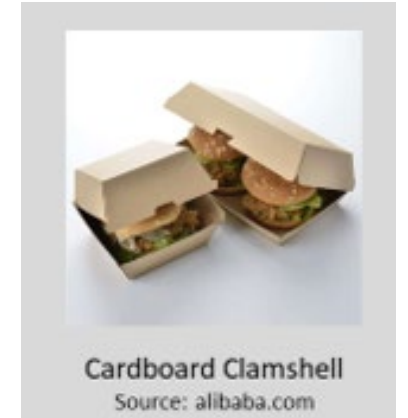


Source: Freedonia Research

Carryout Container Opportunities

High Levels of Off Premises Dining Spur Demand; Changing Product Mix

- Popularity of food delivery and carryout, especially from full-service restaurants, continues to boost demand for carryout containers
- Historically, foam clamshells have held a high share of this market, but the material mix is shifting
- How can molded fiber get a larger share of this market?



Global Foodservice Disposables Trends: Market Penetration



US

Molded fiber disposables have quickly gained market share.



Canada and Europe

Molded fiber has penetrated even more due to stricter regulations on foam packaging and single-use plastics compared to the US.



Latin America

Despite abundant supplies of raw material, especially wood pulp and sugarcane bagasse, molded fiber has only a minor share of demand in Latin America, limited by a lack of local converters and its higher relative cost in applications like foam clamshells.



Asia

Growth will be slightly slower in Asia – particularly developing countries – due to less regulations and greater focus on low-cost packaging options.

Global Foodservice Disposables Trends: Growth Opportunities



Innovations

- Improvements in non-PFAS coatings – such as PLA bioplastic and the recent announcement of graphine oxide as a potential alternative – will further bolster growth for food-safe molded fiber disposables.

Regulations

- Double digit growth is forecast for molded fiber in Latin America due to increasing regulations and restrictions on foam, which currently dominates the market.
- Additional gains could come if less regulated spaces in Asia began regulating foam packaging.

Capacity Expansions

- Establishing conversion plants in regions with significant raw material resources – especially Latin America and South Asia – could boost market penetration in those areas.

Consumer Education

- Sustainable packaging gains requires making the case for the need directly to consumers as well as foodservice vendors. Especially that a potentially higher cost is worth it in function and purpose.

Egg Cartons: Regulations & Sustainability Leading to Change in a More Mature Market



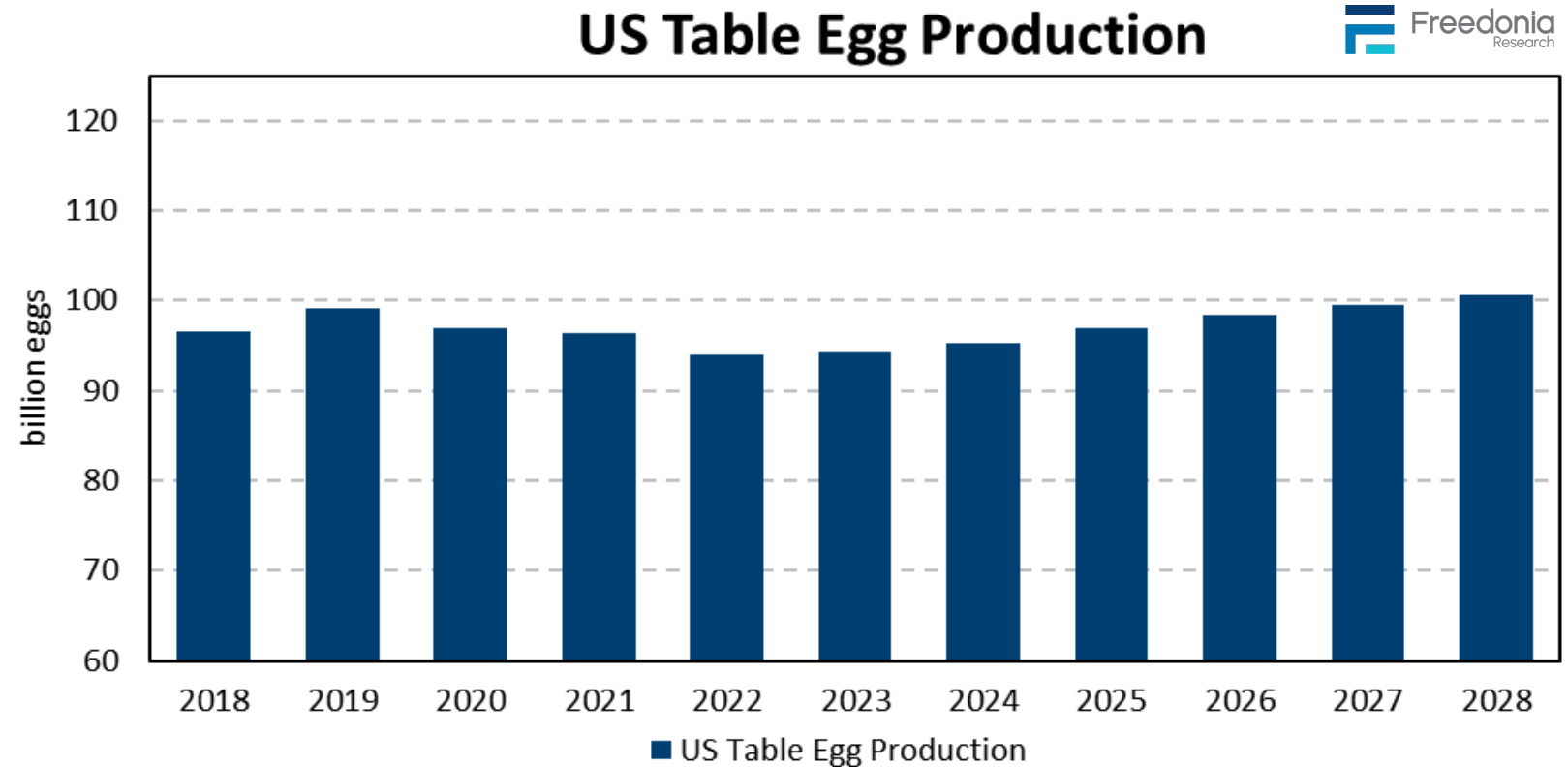
egg cartons
webstersunstore.com



trays & filler flats for eggs & produce
regfilesupplyco.com

Molded Fiber Egg Carton Demand

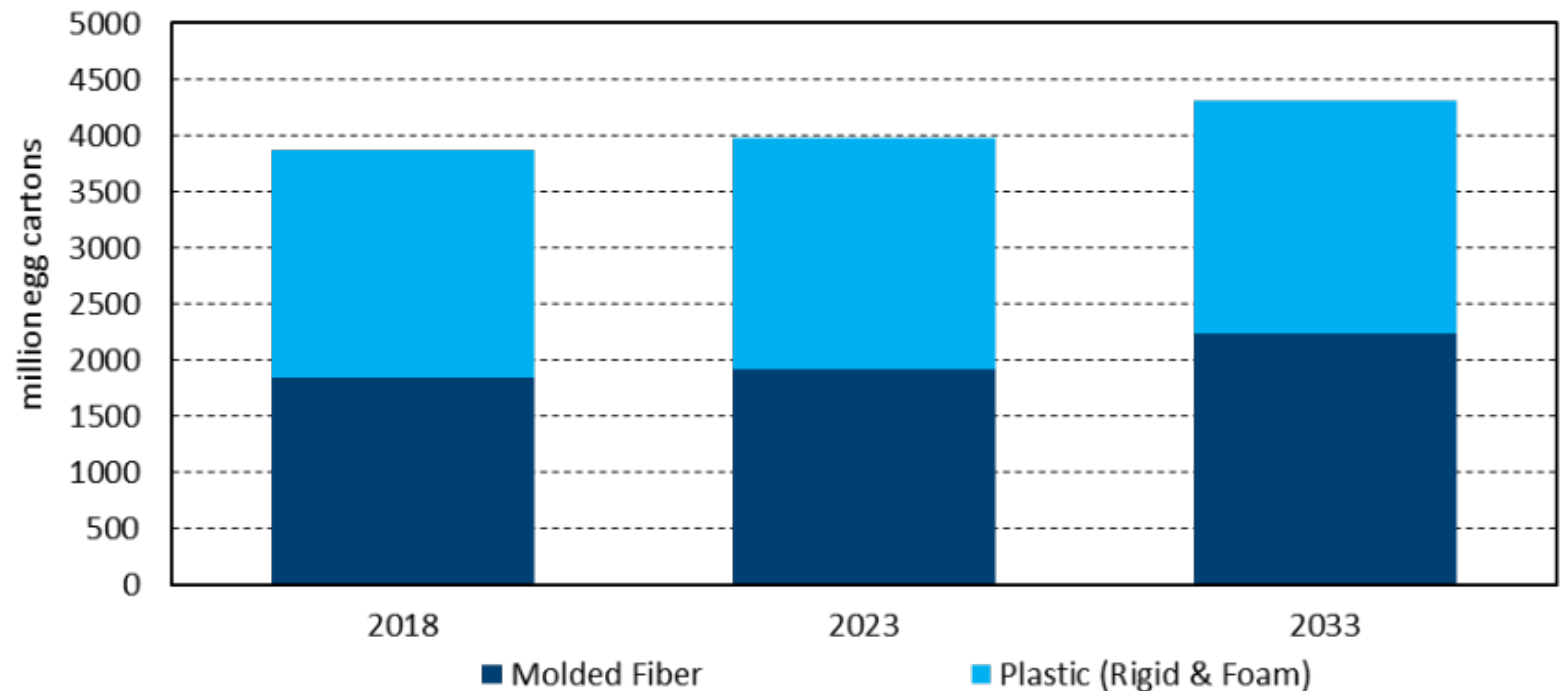
The market is rebounding from avian flu production issues and high egg prices, which pressured consumer demand.



Molded Fiber Egg Carton Demand

- Molded fiber is taking back market share from plastic due to increase in regulations restricting plastic foam, but is still facing rising competition from rigid plastic cartons.
- Molded fiber is rising from 48% of egg cartons in 2018 to 52% of egg cartons in 2033.
- Significant new production capacity is coming in North America.

Egg Cartons Sold in the US



Source: Freedonia Research

Molded Fiber Egg Cartons: New Regulations

Timeline of Notable Regulations Banning Foam Egg Cartons in the US & Canada



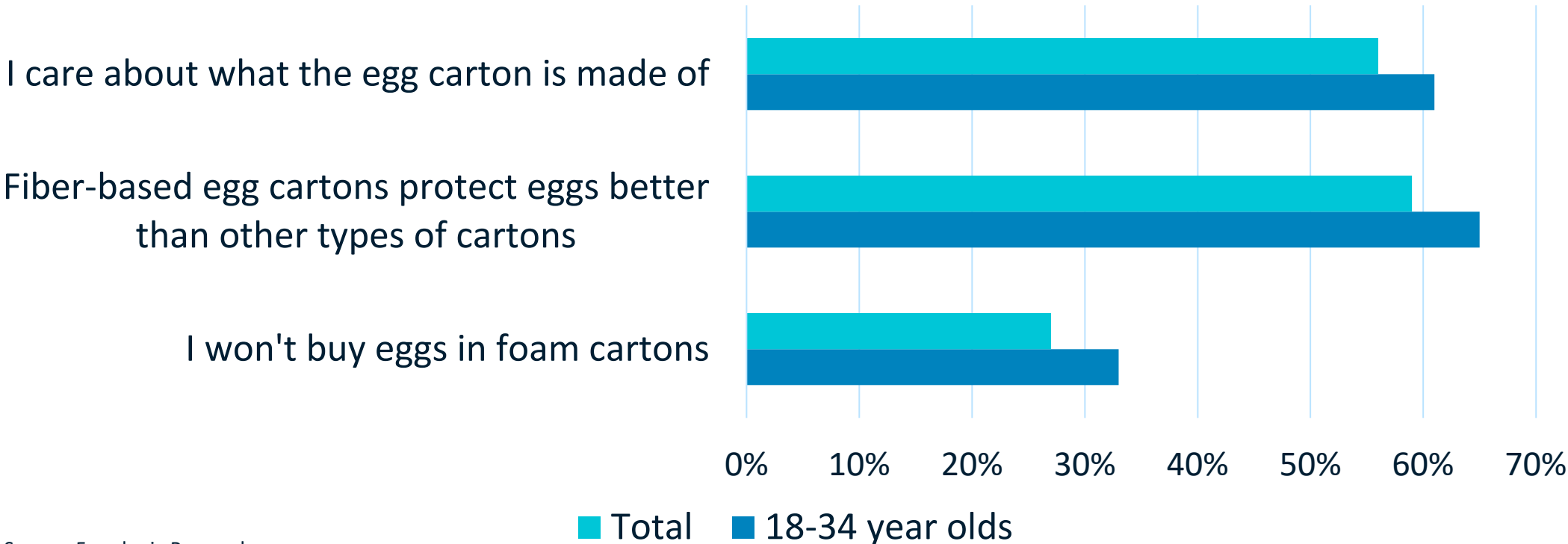
Molded fiber, an already leading egg carton material, will benefit from bans on foam.



Consumer Attitudes About Egg Packaging



Favorable Attitudes Among Younger Consumers Bode Well for Future Prospects of Fiber-Based Cartons



Source: Freedonia Research

Industrial/Protective Packaging: E-Commerce Opportunities



tray inserts
moldedfiber.com



end caps
pacificpulp.com



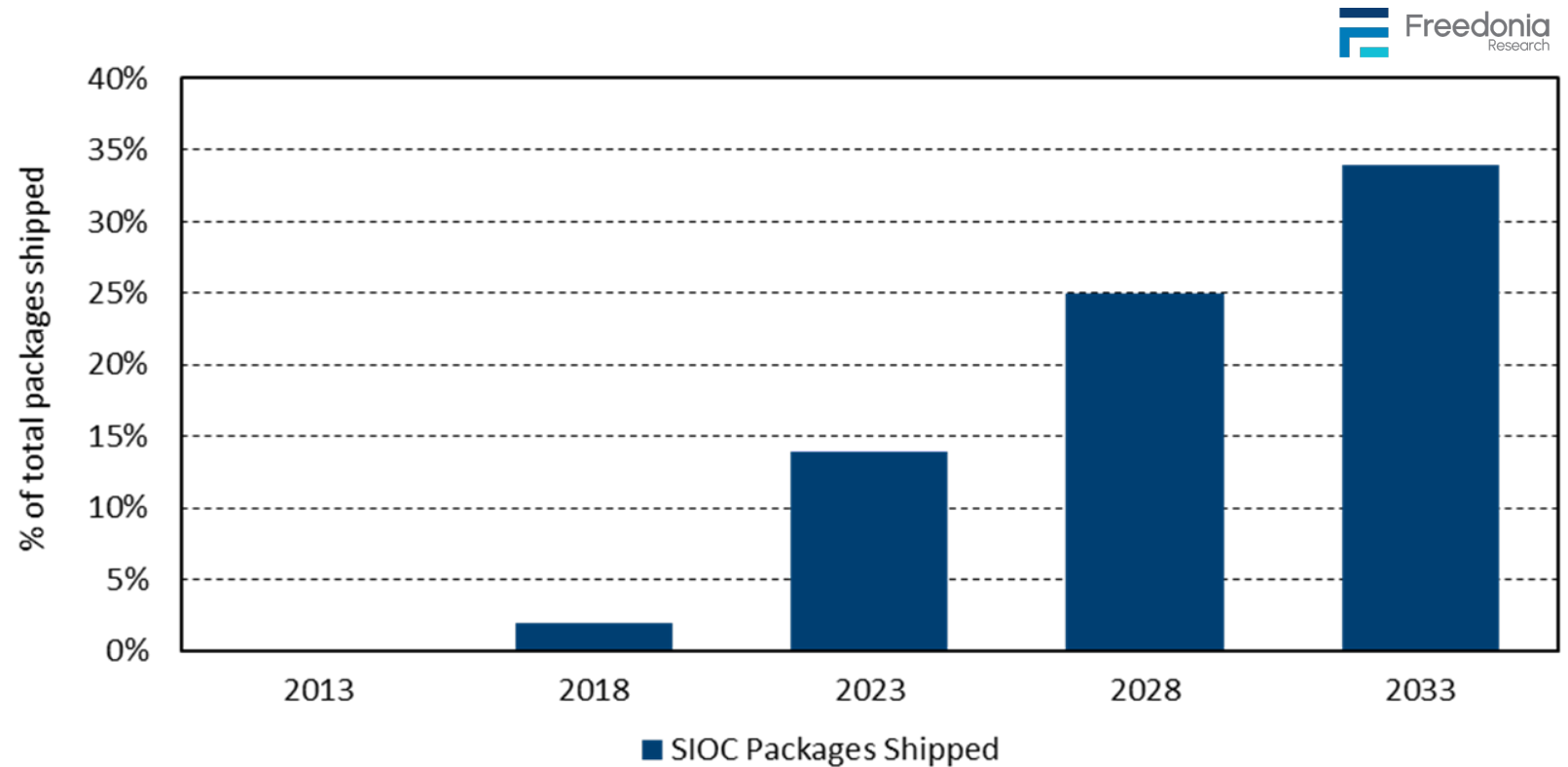
shippers
wine-n-gear.com



cradles
fiberforminc.com

Molded Fiber Protective Packaging Demand

- Protective packaging is a strong market for molded fiber as it offers good performance and helps meet sustainability goals.
- Growth in ships in own container (SIOC) packaging could boost sales to product manufacturers looking to improve package durability for direct-to-consumer shipping.



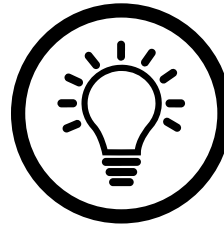
Source: Freedonia Research

Conclusions



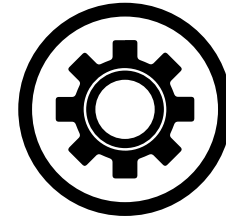
Advantages in Protective Performance & Sustainability

Molded fiber is seeing above average growth in markets such as egg cartons and industrial/protective packaging where it has good performance and helps meet sustainability goals.



Opportunities for Innovation

Additional improvement is needed in performance/moisture resistance and environmentally-friendly coatings to expand demand in areas such as food/produce packaging and restaurant carryout.



Aesthetics Comes Next

Continued development of new products with better appearance could provide more opportunities in consumer goods packaging, especially with eco-conscious brands.

Questions?

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