



Plastic Replacements Driving Sustainability Trends in Pulp & Paper Industry

By: Nancy Hasson, Senior Consultant, Business Intelligence, Fisher International

Consumer awareness about excessive plastic pollution and its hazardous effects to the environment has intensified in recent years. As many governments respond by implementing new taxes and bans on plastic, brand owners are substituting renewable materials for many types of plastic packaging. So, how will these trends affect the pulp and paper industry, and will available capacity and fiber supply keep up with demand for fiber-based packaging?

Because only 9% of the plastic produced since the 1950s has been recycled, it's projected that by 2050 there will be around 12 billion tons of plastic litter in landfills and the environment¹.

Plastics don't biodegrade, they only break down slowly into smaller fragments called microplastics, which end up making their way into our food chain and subsequently into our bodies². The health risks of microplastics are not fully understood, but anti-plastic sentiment is already fueling sustainability trends in packaging.

As consumer preference for renewable and environment-friendly materials grows, pulp and paper industry participants are evaluating how the anti-plastics movement will affect fiber-based packaging. Key questions going forward include:

- Which packaging applications are most likely to convert from plastic to paper?
- Which grades will be most impacted, and in which regions of the world?
- Will fiber availability and paper supply be sufficient to address the future demand?
- What investments can we expect in capacity to meet future demand?

Market Drivers

The movement to reduce waste from plastic packaging is driven by government regulation and, increasingly, by evolving consumer preferences and pressures. This combination of factors is driving brand owners to replace plastic with renewable and recyclable alternatives and to address plastic use in their sustainability missions and goals.

Legislation: To address the environmental crisis, government regulation has increased in many countries to help drive change and reduce the impact of plastics.

Certain single-use plastics (e.g., drinking straws, coffee stirrers, plastic bottles, plates, cups, utensils, shopping bags) have been identified as leading contributors to plastic pollution and are the target of most legislation. While bans on polyethylene shopping bags have been in place in many parts of the world, the EU and UK are leading the way in implementing wider bans on single-use plastics:

- The United Kingdom has banned the sale of single-use plastic to end-users.
- The European Union has implemented a [£.80/kg tax](#) on non-recycled plastic packaging waste.

¹ United Nations Environment Programme (2018). Single-Use Plastics: A Roadmap for Sustainability.

² Scott, Alex. (February 4, 2019). The pervasiveness of microplastics. Chemical & Engineering News.



- [23 states](#) in the US have some form of plastic bag legislation enacted, and several cities have banned plastic drinking straws³.
- China banned certain single-use plastic products in 2020 with a phased implementation

Consumer: Public awareness of plastic waste in the environment has risen to an all-time high.

Interest in plastic waste and pollution has consistently increased over the years as more consumers educate themselves on the negative impact plastic waste has on the environment. A few findings from the 2020 [Paper & Packaging Board report](#) confirm this:

- 77% of consumers think more highly of companies that package their products in paper-based packaging
- 84% of consumers express concerns about the environment
- 33% of consumers avoid plastic product packaging if they can

Consumer research firm Mintel predicts sustainability is among the top five trends that will impact the packaging industry over the coming year: “Brands will be called to keep marine conservation at the forefront of packaging development.”⁴

Brand Owners and Retailers: Packaging trend-watchers say the sustainable packaging trend is here to stay, and brands are making serious commitments to act upon the anti-plastics outcry.

Several well-known consumer goods companies have committed to reducing plastic content in their packaging:

- Nestlé released its plan to make 100% of its packaging recyclable or reusable by 2025.⁵
- Apple has a comprehensive paper and packaging strategy, which explains how it reduced plastic content of its iPhone 7 package by 84% versus the iPhone 6s, with a switch from plastic trays to fiber-based packaging⁶.
- Samsung announced plans to replace plastic packaging with paper and other renewable materials, even if the alternate materials are higher cost⁷.

Another indicator of the importance of replacing plastic is the number of innovations in renewable, eco-friendly packaging, which are being announced at a fast clip, for example:

- Ahlstrom-Munksjö has released its new PurposeFil™ packaging papers, which uses fiber from responsible and legal sources to meet multiple sustainability goals.
- Anheuser-Busch InBev, a Belgium-based beverage company, has launched a new sustainable packaging design for its Corona beer brand that uses leftover barley straw from farmers’ harvest to create a paper board for packaging.
- Absolut recently rolled out its paper bottle prototype, which is made of a mix of paper and recycled plastic.

³ State Plastic Bag Legislation (2021)

⁴ Mintel. (December 12, 2017). Mintel Announces Five Global Packaging Trends for 2018.

⁵ Nestlé (2020). The Rules of Sustainable Packaging

⁶ Apple, Inc. (October, 2017). Apple’s Paper and Packaging Strategy.

⁷ Samsung Press Release (January 28, 2019). Samsung Electronics to Replace Plastic Packaging with Sustainable Materials.



- Graphic Packaging introduced its new PaperSeal MAP tray, a fiber-based alternative to plastic trays for meat, produce, etc.
- Beverage companies are adopting paperboard multi-packs for cans to replace shrink wrap and plastic rings, such as [Molson Coors](#) and WestRock's CanCollar®.

Large retailers, especially in Europe, are also joining the movement to reduce plastic packaging. For example, UK retailers Iceland and Lidl have announced goals to remove plastic from certain product lines⁸. In France, retailer Carrefour signed a French national pact to phase out plastic packaging by 2025, along with other companies including L'Oréal, Nestlé, Danone and Unilever⁹. A few years ago, supermarket chain EkoPlaza opened the world's first plastic-free shopping aisle in Amsterdam, with plans to roll out similar aisles across 74 branches¹⁰.

Single-Use Plastics

As we consider the impact of the anti-plastics trend on the pulp and paper industry, there are many single-use plastics that have fiber-based substitutes. Let's review some of the high-volume packaging items that could be replaced with paper or molded fiber:

- **Drinking Straws:** Numerous bans have been proposed or implemented on plastic straws, which are rarely recycled. Nestlé and Tetra Pak announced they will eliminate plastic straws; Seattle became the largest US city to ban them; and Starbucks almost completely phased out plastic straws¹¹. Paper straws are reported to be 10 times the cost of plastic straws¹², but are still a very inexpensive item at \$.02 - .05 each. In the US, straws are estimated to consume about 50,000 tons of plastic per year.
- **Plastic Shopping Bags** have been a prime target of bans around the world (banned in 60 countries and counting), because billions are used annually for only a few minutes, and used bags clog waterways, drains and choke marine life. However, faced with pay-for-use bags (paper, plastic and re-usable), consumers trend toward the re-usable bag, boosting growth in paper grocery bags only short-term while consumers build their personal re-usable bag inventories.
- **Plastic Bottles:** about 200 billion plastic water bottles are produced globally, and the majority end up in landfills. Paper cartons could replace a portion of plastic bottles as consumers seek to avoid plastics.
- **Disposable Cups:** paper beverage cups are forecast to grow 4% per year¹³. About 250 billion fiber-based cups are produced every year, compared to 500 billion plastic cups¹⁴. In municipalities where paper cups are recyclable, they are a renewable alternative to plastic cups.
- **Foodservice Packaging:** take-out food containers have been a major market for paperboard, and it's expected that consumer preference will continue to drive the

⁸ Farrell, Steve. The Grocer (September 21, 2018). Lidl to remove black plastic from fruit & veg lines

⁹ Carrefour (February 21, 2019). Carrefour is taking action against plastic packaging

¹⁰ Packaging Insights (March 1, 2018). Plastic-free supermarket aisle opens in Amsterdam

¹¹ Gibbens, Sarah. National Geographic (January 2, 2019). A brief history of how plastic straws took over the world

¹² Ell, Kellie. (July 9, 2018). Paper straws cost 'maybe 10 times' more than plastic straws.

¹³ Future Market Insights (November 2018). Paper Cups Market

¹⁴ Earthday.org (2018). Fact Sheet: How much Disposable Plastic We Use



conversion from plastic to paper in foodservice. In addition, molded fiber packaging has been a growing choice for foodservice items including bowls, plates, trays and clamshell containers--although the latter is three times higher cost in molded fiber than Styrofoam.

- **Ready Meal Containers:** product innovations have been announced for new films and fully biodegradable meal containers which will allow organic and premium brands to launch fiber-based packaging for the fast-growing ready meal market. This market is growing 4-5% per year¹⁵.

These are just a few of the potential packaging segments which will be affected by the growing trend. Single-use items have typically been replaced by fiber-based materials first, as they comprise a huge portion of marine litter and are the target of most anti-plastic regulation.

Implications for Pulp and Paper

Pulp and paper industry participants need to know where to expect investment as plastic substitution continues over the next few years. Availability of paper and pulp by grade and by region can be analyzed using FisherSolve™ Next to allow estimates of additional capacity needs and possible machine conversions.

We project that virgin and recycled paperboard will see a significant increase in demand, as paper food-grade containers and paper cups replace plastic over the next five years.

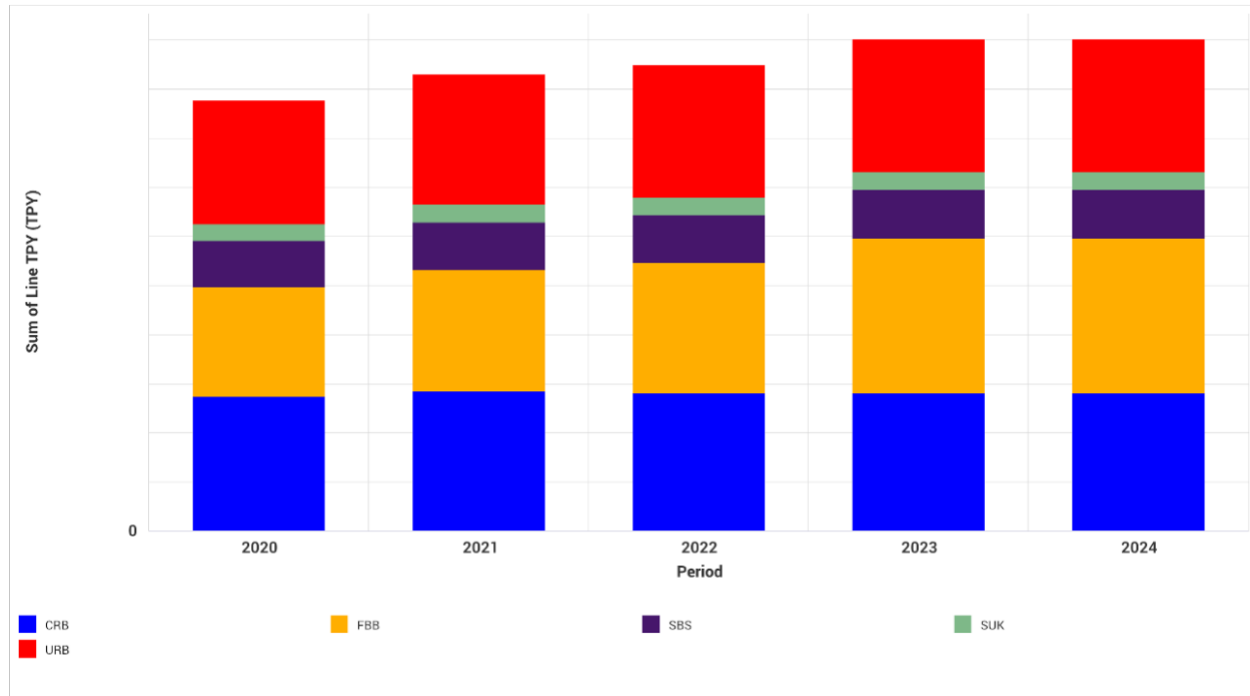
Considering plastic beverage cups, replacing 10% of plastic cups globally with paper, would require an estimated 588,000 tons of cup stock, an increase of 20% over 2021 global capacity of 2.9 million tons.

If we calculate potential replacement of plastic packaging in the US and Europe as public concern over plastic waste continues, Fisher estimates that a 5% replacement of plastic with paper would consume 1.5 million tons of paper, both virgin and recycled. Figure 1 shows the actual and announced global paperboard capacity increase of 12 million tons over the next 4 years-- only 1.4 million tons of this additional capacity is in Europe and North America.

¹⁵ Technavio (January, 2016). Technavio Releases new report on Global Ready Meals Market



Global Paperboard Capacity Actual and Announced



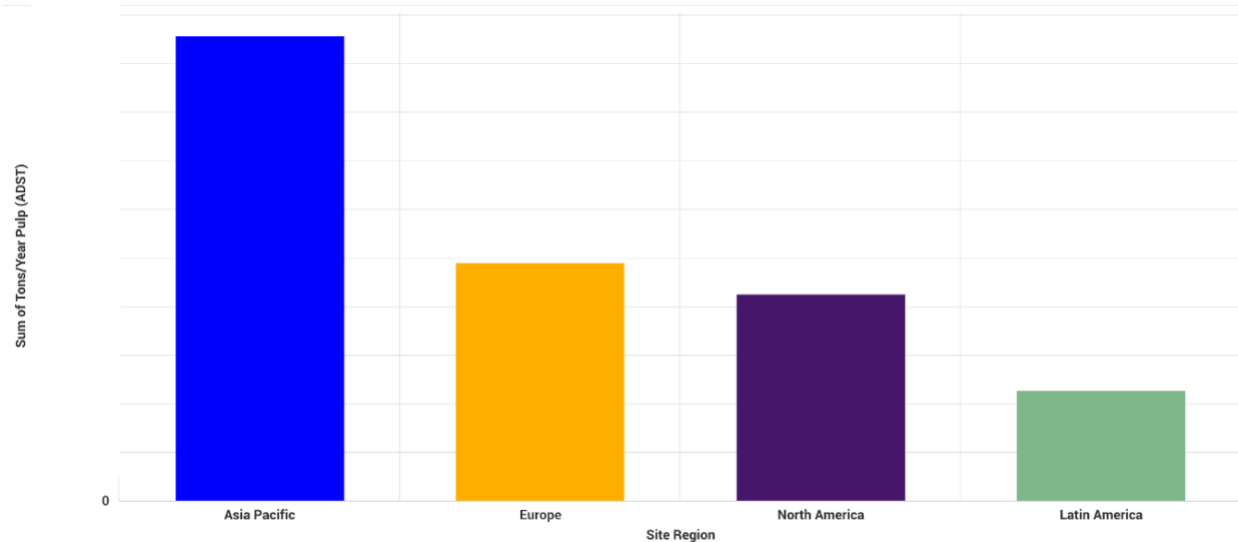
Source: FisherSolve™Next

And what about the fiber required to support the shift away from plastic packaging? Beyond paperboard, molded fiber packaging has seen steady growth over the past couple years, as reported by the International Molded Fiber Association. Foodservice items and a number of consumer and household product packages are now made with biodegradable molded fiber, instead of plastic. As advancement in manufacturing technology continues for molded fiber, cost reductions and performance improvements will allow more packages to convert to molded fiber, using both virgin and recycled pulp¹⁶. How will this affect pulp pricing in an already competitive market?

¹⁶ International Molded Fiber Association (June 18, 2018). The new “old” packaging material.



Pulp Production by Region, 2021



Source: FisherSolve™ Next

Sustainable Fiber Supply

To satisfy increased demand for paper and pulp instead of plastic, capital investment in new capacity may be required. The most likely locations would be areas with good fiber resources, such as the Nordic countries, Latin America, Russia and North America.

An additional consideration relating to fiber supply, is the intention of companies like Apple and Samsung to source packaging materials from sustainably-managed forests, as defined by organizations like the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certifications (PEFC).

The anti-plastic movement and range of traditional and new packaging materials available to replace plastic brings up important questions and opportunities for the pulp and paper industry. A few issues to consider:

- If more pulp is required to meet demand for paperboard and molded fiber packaging, will pulp prices increase so much that fiber-based alternatives to plastic become cost-prohibitive?
- How quickly will consumer sentiment cause a shift in demand for renewable packaging materials? What will be the pace of investment and substitution of plastic in Europe, North America, South America and Asia Pacific?
- Will fiber from sustainably-managed forests be enough to support growth in pulp and paperboard?



- How quickly will renewable fibers like bamboo, bagasse and straw contribute significantly to fiber supply?

The experts at Fisher specialize in addressing the important and complex issues facing the pulp and paper industry today. Give us a call to talk further about developing sustainability trends and new opportunities in this changing business climate.