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TWM

TISSUE WORLD MAGAZINE

The independent news provider for the global tissue business

A NEW ERA OF HYGIENE

HEALTH HABITS IN THE PANDEMIC WILL BOOST TISSUE FOR YEARS

Plus ...

MarketIssues
Asia: Hygiene is key as increased demand to be sustained

Country Report: Turkey
'Global tissue consumption set to rise by 10-15% post-pandemic'

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Tissue proves its resilience

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Already dominating in Eastern Europe, the Middle East and Africa, Turkey's Hayat Kimya continues its impressive growth programme. TWM interviews Lutfi Aydın, Global Tissue Production Director.

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Cover: New hygiene habits established during the global outbreak of Covid-19 in 2020 are expected to boost tissue production for years to come. Image by Contrast Creative, Manchester, UK

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IS THE GLOBAL TISSUE MARKET AT THE BEGINNING OF A NEW AND PERMANENT ERA OF HYGIENE? LEADING COMPANIES THINK SO.

Helen Morris
Senior Editor, Tissue World Magazine

Across TWM pages in this edition you will read a familiar business outlook expressed with confidence.

Take Bilge Çiftçi, Chief Executive of Turkey's Eczacıbaşı Consumer Products, as a good example: "We believe that with the increased awareness and sensitivity towards hygiene, some of our personal hygiene habits will change forever."

In her particular case, she suggests that Turkey's relatively low per capita tissue usage of 6.3kg will increase. Why? Because hygienic paper towels and other tissue products, having proved their value and quality during the pandemic, will begin to replace traditional habits, and be preferred more. "We think that this trend will also be permanent", she says.

The same optimism, in its own particular circumstances, will be seen further in Turkey, and in TWM's coverage on Asia and India. Tissue is beginning a New Era of Hygiene.

The question arises: is this well-informed optimism of the moment, an overconfident assessment as the industry emerges from the worst – to-date – aspects of the pandemic, or is it a solid prediction that consumer habits embraced during the pandemic will remain, if not in whole then at least at large.

As we emerge from the most intense months of the pandemic, our many contributors are agreed on the importance that hygiene played, and is still playing, and will play during the immediate post-peak pandemic and in the years to come. They suggest a deeper appreciation of tissue's health attributes will last far ahead.

Just as Bilge Çiftçi expects significant growth in an already expanding business portfolio, so fellow countryman Orhan Öğücü, Lila Group's chairman, expects a 10-15% increase in tissue consumption globally after Covid. He isn't just optimistic, he says: "That is what I really feel, and I see it. And the reasons are simple; our hygienic understanding has changed. Our behaviours have changed, we are washing our hands much more. We will be more careful, even after the pandemic. And this is a big opportunity for the tissue market."

Consumers grow to rely on and trust tissue products more during a health crisis which has reached into every home, and will repay that faith with loyalty.

Benny Iswandy, Chief Executive for Asia Pulp & Paper's Indonesian-based global tissue business unit, also foresees impressive growth ahead: "We are servicing the worldwide market and we are seeing a much greater awareness of the importance of personal hygiene, so we expect the increased demand for tissue products such as toilet paper, facial and hand towel, sanitising wet wipes, and PPE to continue."

In India, tissue leader Century Pulp and Paper's Chief Executive Jaiprakash Narain reports domestic tissue demand growing up to 15% year-on-year. The key will be the long-awaited adoption of cultural tissue habits in daily life linked to hygiene: "Hygiene awareness is increasing, and that is making India a very high potential market for tissue."

Tissue World set to return with tradeshow in Düsseldorf in March 2021

Tissue World tradeshows are back. Informa Markets has scheduled the first of its back-in-business global reach events to coincide with the world's largest dedicated tissue industry trade show ... taking place for the first time in Germany, in Messe Düsseldorf from 16-18 March, 2021.

While TWM has maintained your vital link with business colleagues across the world during the difficult months of pandemic, reality face-to-face trading has been sorely missed. Now it's back on again, and will be run in line with Informa's AllSecure guidelines to ensure attendee safety, welcoming the industry back for the trade show and conference sessions.

TWM will be providing all the details and information in due course. We look forward to hearing from you, and seeing you all on the show floor again soon.

HYGIENE IS KEY AS INCREASED DEMAND TO BE SUSTAINED – EMERGING TRENDS NOW AND POST-PANDEMIC

China and the ASEAN region were the first to suffer the worldwide pandemic. Leading tissue players are now emerging stronger and more flexible having adapted to the changing times. TWM Senior Editor Helen Morris talked to Benny Iswandy, Chief Executive for Asia Pulp & Paper's Indonesian-based global tissue business unit.

"IN THE FIRST HALF OF THE YEAR, WE NOT ONLY WERE ABLE TO STEP UP SUPPLY OF TOILET PAPER AND WET WIPES TO MEET THE PANIC BUYING AND SHORTAGES IN MANY COUNTRIES, BUT WERE ALSO ABLE TO TEMPORARILY RE-TASK SOME OF OUR PRODUCTION LINES TO PRODUCING FACE MASKS AND FACE SHIELDS IN ORDER TO FILL THE IMMEDIATE SUPPLY GAP."

For tissue companies across the world Covid-19, meant dramatic and rapid changes to what they had thought to that date were optimal running operations. Now, in response, many have stepped up a level again.

One of those is Asia Pulp & Paper (APP), which globally supports the growing demand for pulp, tissue, packaging, converting and paper products with an annual capacity of over 19 million tonnes per annum. Chief Executive for the company's Indonesian-based global tissue business unit, Benny Iswandy, while looking back on what he calls the "enormous impact" the pandemic has had on society and industry globally, talks approvingly of the benefits accruing:

"Economies have slowed and lives have been disrupted in ways we could not have imagined just a year ago. Like many other businesses, we have had to implement robust measures to keep our employees, and their families, safe, and fortunately have seen fewer disruptions to our operations than some other industries.

"In the first half of the year, we not only were able to step up supply of toilet paper and wet wipes to meet the panic buying and shortages in many countries, but were also able to temporarily re-task some of our production lines to producing face masks and face shields in order to fill the immediate supply gap."

When he looks more broadly at APP's business reach, he says: "Some of the changes we're seeing are actually good for pulp and tissue."

Where, specifically, does he see those benefits at work?

"With most countries undergoing some form of isolation at home, food delivery and take-away has become more of a norm, driving demand for more sustainable food packaging. Retail demand through online shopping has also bolstered our tissue business. Quite early on, it became apparent that these trends will lead to a glut of packaging waste, especially with single-use plastics. We've seen increasing interest in our plastic-free, biodegradable food packaging product Foopak Bio Natura, and have recently closed deals in Latin America and South East Asia to produce more sustainable food packaging."

Trends, he says, which suggests two developments. Firstly, that the food delivery and take-away business is probably going to continue to grow, even as countries recover from pandemic-related isolation. Secondly, that the wave of environmental awareness in 2019 that led to "straw bans" is both sustained and maturing. He expects to see greater demand for certified sustainable packaging moving forward.

When the initial surge for tissue occurred in early 2020 – "tremendous spikes" he calls them – demand was more concerned for quantity than quality. Everything was sold – branded and private label. It was not a question of private label outselling brands. Everything went off the shelves, leading retailers to prioritise speed and quantity over other concerns.

"This was particularly for toilet paper. We were able to meet the surge by moving our production schedules around. This is due to the vertically integrated nature of APP's business model where we can easily switch our pulp and base paper manufacturing according to market demands."

Looking ahead, what changes does he see? "It remains to be seen how consumption patterns will change. In the near term, as schools and businesses begin to cautiously re-open, we expect to see demand for AfH products return. In the long term, it is safe to assume that tissue demand will continue to grow, and it is incumbent on producers like us to invest in technology and techniques to allow us to do more with less."

On retail: "We have certainly seen that online shopping is on a faster growth trajectory that has definitely been substantially helped by Covid-19. As consumers become more used to buying online and having more brand and value options, we have to become smarter in how to win and retain brand loyalty. Offline sales however, still remain the dominant part in grocery sales."

On prices: "There may be a shift towards more price-based purchasing given the broad impact Covid-19 has had on jobs and incomes. Demand for lower priced products can not only be met by private labels, but also branded offerings, depending on whether the country has a high private label segment size – this can range from more than 40% to as low as 5% in some countries in Asia. Where the ratio is high, we have seen a move by retailers to increase their offering and move up the price tier. Either way, APP is still well placed to reliably meet the quantity and quality demands of our customers."

On consumer habits: "Generally, we are seeing a much greater awareness of the importance of personal hygiene and so we expect the increased demand for tissue products such as toilet paper, facial and hand towels, sanitising wet wipes, and PPE to continue.

"One of APP's key value propositions is our fully integrated approach towards tissue production and our ability to rely on managed forests. As a result, we are able to produce a steady supply of high-demanded hygienic and sustainable virgin tissue products. We are servicing the worldwide market and it's our commitment to have the supply stable at any situations, including during Covid-19.

"We expect to continue to see changing consumption habits – product types, usage occasion At-Home and AfH. Shopping habits are all opportunities for us in the area of innovation and for our customers to work with APP as a reliable supply chain partner.

"We have overcome any challenge of sudden demand surge and as a fibre and converted tissue supplier we can guarantee stable supply into the market. In terms of pulp prices, what we see on the fibre supply and demand side is that the pulp price market will remain stable."

Should there be further waves of contagion, he expects tissue demand to spike again: "Hopefully not as aggressively, and we continue to assure our partners, retailers and consumers that we can meet demand, just as we have before, and that there is no need to engage in panic buying or hoarding."

"IT REMAINS TO BE SEEN HOW CONSUMPTION PATTERNS WILL CHANGE. IN THE NEAR TERM, AS SCHOOLS AND BUSINESSES BEGIN TO CAUTIOUSLY RE-OPEN, WE EXPECT TO SEE DEMAND FOR AFH PRODUCTS RETURN. IN THE LONG TERM, IT IS SAFE TO ASSUME THAT TISSUE DEMAND WILL CONTINUE TO GROW, AND IT IS INCUMBENT ON PRODUCERS LIKE US TO INVEST IN TECHNOLOGY AND TECHNIQUES TO ALLOW US TO DO MORE WITH LESS."

"GENERALLY, WE ARE SEEING A MUCH GREATER AWARENESS OF THE IMPORTANCE OF PERSONAL HYGIENE AND SO WE EXPECT THE INCREASED DEMAND FOR TISSUE PRODUCTS SUCH AS TOILET PAPER, FACIAL AND HAND TOWELS, SANITISING WET WIPES, AND PPE TO CONTINUE. ONE OF APP'S KEY VALUE PROPOSITIONS IS OUR FULLY INTEGRATED APPROACH TOWARDS TISSUE PRODUCTION AND OUR ABILITY TO RELY ON MANAGED FORESTS."

Major boost to capacity: *Infinity's engineering and manufacturing facilities at Green Bay, USA.*

Infinity expands at Green Bay base

Infinity Machine & Engineering Corporation has responded to the world-wide increase in customer demand by expanding its Green Bay, USA-based engineering and manufacturing facilities.

In July, the company broke ground on the 8,900 square metre facility, which it said will enable it to offer greater manufacturing capacity to customers, implement manufacturing process improvements and expand product line offerings.

Ryan Holmer, technical sales, Infinity, said: "We are seeing tremendous growth across the global market, and our new investment in engineering and manufacturing reflects that."

Fabio Perini in for bamboo masks

Fabio Perini has diversified its product offering with the introduction of a patented technology that produces up to 10,000 biodegradable bamboo masks per minute.

The technology was developed in just over a month during lockdown and is available for Fabio Perini converting lines. It is capable of producing up to 10,000 face masks per minute, which can be adapted to all main "non-woven" materials, including a particular bamboo-based material that can be disposed of with other organic waste.

Cascades's 12.5% volume increase

Cascades has said its second quarter results reflects the resiliency of its business model, as it emphasises its focus to continue to provide customers with "essential, sustainable quality packaging and tissue".

In the second quarter, sales were $1,285m compared with $1,313m in the first quarter of 2020 and $1,275m in the second quarter of 2019. The year-on-year increase was largely due to a volume-driven 12.5% increase in the tissue segment.

Above: *"Our operations executed and adapted well during the second quarter," Mario Plourde, Cascades President and Chief Executive*

CASCADES HAS SAID ITS SECOND QUARTER RESULTS REFLECTS THE RESILIENCY OF ITS BUSINESS MODEL, AS IT EMPHASISES ITS FOCUS TO CONTINUE TO PROVIDE CUSTOMERS WITH "ESSENTIAL, SUSTAINABLE QUALITY PACKAGING AND TISSUE".

A. Celli Paper acquisition

A.Celli Paper has diversified its product offering after acquiring PMT Italia. The Italian paper machine supplier said the purchase has made it "a main player in the sector".

Pulp price rise

Södra Cell increased the price of its NBSK pulp in Europe by $40/tonne to $880, effective as of 1 October.The company said the current net price of NBSK in Europe "is not sustainable, and an upward momentum on price is to be expected".

WEPA's AHEAD 2.2S

WEPA Piechowice has invested in a Toscotec-supplied AHEAD 2.2S tissue line on a full turnkey basis. The project is planned for start-up in the third quarter of 2021 and it will be the sixth tissue line delivered by the supplier to the German group.

Clearwater expects

Clearwater Paper has said demand for tissue products is expected to remain "at elevated levels", as it reports its second quarter results. The company reported a net income of $23m and Adjusted EBITDA of $79m for the quarter.

Boost for Sofidel

Sofidel has increased its capacity in the USA and Poland after investing in four Gambini supplied Flex and ProFlex converting lines. Between May 2020 and January 2021, three lines will be started up at the company's plants in Circleville, Ohio, and Inola, Oklahoma. The fourth will be installed at the company's Ciechanów site in Poland.

Laser guide launch

Elettric80 has targeted sustainability and operating efficiency with the launch of its next generation of Laser Guided Vehicle (LGV), the new Unicorn. Developed to improve automated warehouse management and quality of parent reels compatible with those handled by the Model Elephant (Clamp) LGV, the latest model can vertically stack reels up to three levels high (up to 9.0 metres), picking up reels using expandable shafts that no longer rely on clamps.

Lee & Man invests

China's Lee & Man Group has boosted its production capacity by 310,000tpy after completing a series of machinery investments supplied by Baosuo Enterprise Group. Jiangxi Lee & Man has added 120,000tpy of high-end household paper after investing in six BC1300-2850 Crescent Former TMs, as well as adding 60,000tpy of high-end household paper after investing in three BC1300-2850 Crescent Former TMs.

Hengan capacity boost

China's Guangdong Hengan Paper Co has boosted its production capacity after investing in four Andritz-supplied PrimeLineCOMPACT M 1600 tissue machines. They will be installed at its new mill in Yunfu, Guangdong, for the production of high-quality facial, toilet, handkerchief and napkin tissue grades made of virgin market pulp. They are scheduled for start-up in the fourth quarter of 2021.

8th for Hayat

Turkish tissue producer Hayat Kimya has invested in its eighth Valmet-supplied tissue machine to be installed at its new site outside Moscow, Russia. The Advantage DCT 200 TS tissue machine – TM9 – will have a width of 5.6m and a design speed of 2,200m/min.

TM for Yunnan Yuxi Nanen

China's Yunnan Yuxi Nanen Company has boosted its production capacity after investing in a Baotuo-supplied Crescent Former tissue machine. The paper machine model is BC1300-2850 and it has a design width of 2.8m and a design speed of 1,300m/min.

Vinda stock gain

Vinda Personal Care (Guangdong) Co. has invested in an Andritz-supplied stock preparation system for the four tissue machines at its mill in Yangjiang, China. Start-up is scheduled for the second to third quarter of 2021.

For full news coverage, go to
www.tissueworldmagazine.com

CHINA'S LEE & MAN GROUP HAS BOOSTED ITS PRODUCTION CAPACITY BY 310,000TPY AFTER COMPLETING A SERIES OF MACHINERY INVESTMENTS SUPPLIED BY BAOSUO ENTERPRISE GROUP. JIANGXI LEE & MAN HAS ADDED 120,000TPY OF HIGH-END HOUSEHOLD PAPER AFTER INVESTING IN SIX BC1300-2850 CRESCENT FORMER TMS.

STRONG EXPORT PERFORMANCE MAINTAINS TURKEY'S TISSUE BUSINESS GROWTH

Even with the country's currency challenges, rising unemployment and pandemic insecurity, its regional position remains robust and poised to survive and thrive.

Turkey was the subject of this column just two years ago. Critical concerns at that time were the weakness in the Turkish lira and rising costs of imported pulp. Tissue pulp prices reversed their climb at the end of 2018, and now the COVID-19 pandemic is reducing demand in grades other than tissue and packaging. However, the Wall Street Journal reported that the Turkish lira hit a record low versus the US dollar on August 6, 2020, as the virus crisis increased pressure on emerging market economies.

This will make Turkey's tissue exports look more attractive but will also raise the apparent price of pulp imports for tissue making. It is also expected to result in higher consumer inflation and interest rates.

Turkey's economy has slowed somewhat after a 7.4% jump between 2016 and 2017. GDP per capita is shown as blue bars in Figure 1 below. The population is growing by about 0.45% in 2020. Together, these statistics support the continued growth of the overall domestic tissue market in Turkey.

The next set of economic metrics are less supportive for continued tissue demand growth. The inflation rate (shown in Figure 2 as blue bars) has accelerated in the past several years, while unemployment has steadily increased from 2012 to 2018. Unemployment leaped in 2019 from 11 to 14% and has likely worsened in 2020 with the COVID-19 pandemic.

These economic statistics in Figure 2 run counter to Figure 1 and do not support the continued growth of tissue consumption per capita. However, tissue exports will continue to support tissue business growth.

Turkey imports relatively low volumes of tissue compared to its exports. Tissue imports peaked in 2011 and have been on a downward trend ever since. Germany remains the most significant supplier of tissue to Turkey as imports have declined, as shown in Figure 3.

Turkey's tissue exports are growing while imports diminish. The 2019 bar shown in Figure 4 is a little off-pace as it shows a reduction of trade with Greece and Georgia. However, exports from Turkey are still running about 500% of import rates based on performance between 2016 and 2019.

Turkey continues to grow as a tissue exporting nation while the domestic consumer base is growing.

Bruce Janda
Senior consultant, Fisher International

Turkey's tissue business growth can also be seen in the net increase in the number of tissue machines shown in Figure 5. There was a net increase of ten machines from 2007-2017, including a group of five added between 2014 and 2015.

One more machine will come on-line in 2020, and four have been announced for 2021 startup. These additions will result in a large and relatively new tissue fleet for Turkey, and some Turkish tissue companies

TURKEY'S ECONOMY HAS SLOWED AFTER A 7.4% JUMP BETWEEN 2016 AND 2017. GDP PER CAPITA IS SHOWN IN FIGURE 1. THE POPULATION IS GROWING BY ABOUT 0.45% IN 2020. TOGETHER, THESE STATISTICS SUPPORT THE CONTINUED GROWTH OF THE OVERALL DOMESTIC TISSUE MARKET IN TURKEY.

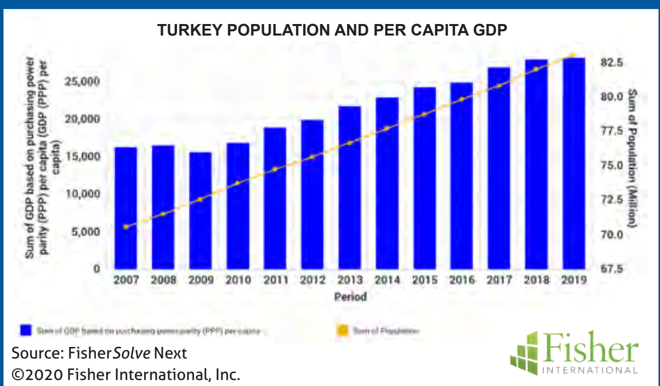

Figure 1

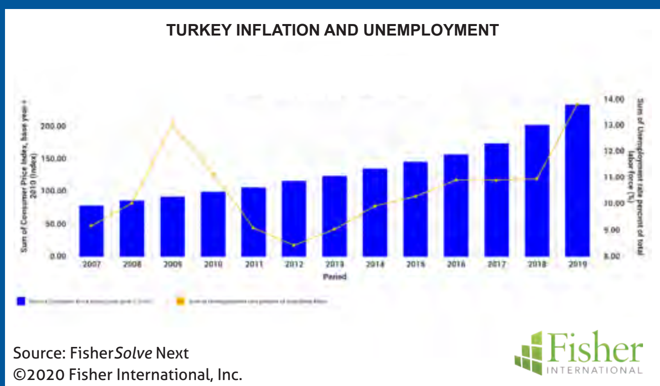

Figure 2

have also started to build capacity in other countries.

Turkey's tissue capacity is heavily focused on consumer grades of towel and tissue as shown in figure 6. There is a relatively small amount of commercial tissue and almost insignificant specialty tissue production, as consumer bath tissue accounts for nearly half of the tissue-making capacity.

It is possible, however, that some of the tissue imports from countries such as Germany could include more commercial tissue products.

Turkey imports a significant portion of its fibre needs. Figure 7 shows that external fibre purchases for the consumer grades range from 40%-50% for virgin baled pulps.

Figure 8 shows more detail on Turkey's fibre purchases for tissue making. A wide variety of northern and southern kraft hardwood and softwood pulps are purchased along with eucalyptus. This suggests that Turkey is carefully blending fibres from a variety of sources to control costs.

Turkey's integrated internal fibre sources are based on recovered papers. Slightly more than half of the fibre is deinked and bleached, but Figure 9 shows a surprising amount is not deinked and remains unbleached.

TURKEY'S TISSUE BUSINESS IS IN A RELATIVELY REASONABLE COST POSITION COMPARED TO THE COUNTRIES THAT IMPORT ITS TISSUE PRODUCTION. UKRAINE, SYRIA, AND BULGARIA ARE LOWER IN COST PER TONNE, BUT RELATIVELY SMALL PRODUCERS.

Turkey's tissue machines are relatively modern given all of the new construction in the past decade. Figure 10 shows the relative quality of Turkey's machines compared to the set of countries that import from Turkey.

The size of each bubble indicates the tissue capacity of the respective nations and the x-axis represents the average machine technical age. The y-axis represents the average machine speed. Turkey is in a stable position with new machines, functional capacity, and running high speeds.

Turkey's tissue business is in a relatively reasonable cost position compared to the countries that import its tissue production. Ukraine, Syria, and Bulgaria are lower in cost per tonne, but relatively small producers. The stacked bar chart shown in Figure 11 reveals that pulps cost is the primary driver of turkey's overall cost position.

This is probably due to its relatively weak currency. However, the other cost categories are well in control to keep the tissue business competitive for exports. If Turkey had an internal source of fibre beyond the amount of recovered wastepaper it already uses, Turkey could have a robust competitive cost position.

Viability analysis of the same set of countries shows Turkey's relative advantages in a more dramatic view in Figure 12. By any of the factors used in the FisherSolve Next™ viability analysis, Turkey has the most robust tissue business for the future.

We expect that Europe will be enforcing a carbon emissions regime soon that could

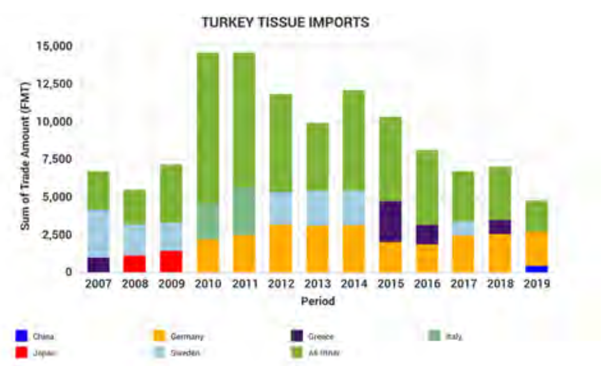

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Figure 3

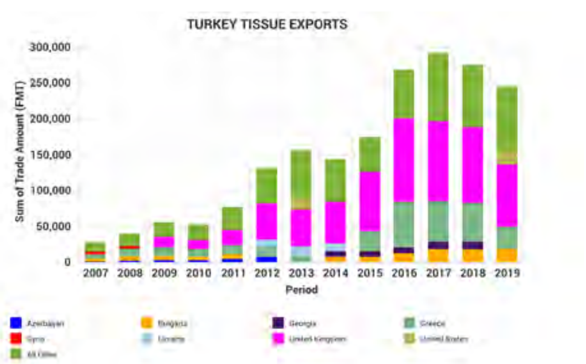

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Figure 4

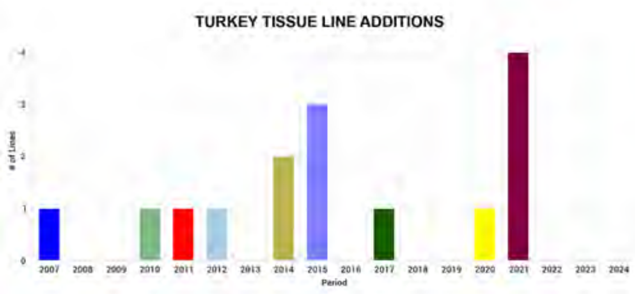

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Figure 5

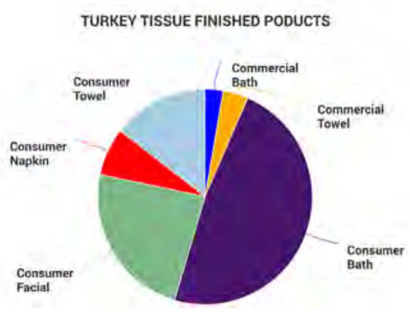

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Figure 6

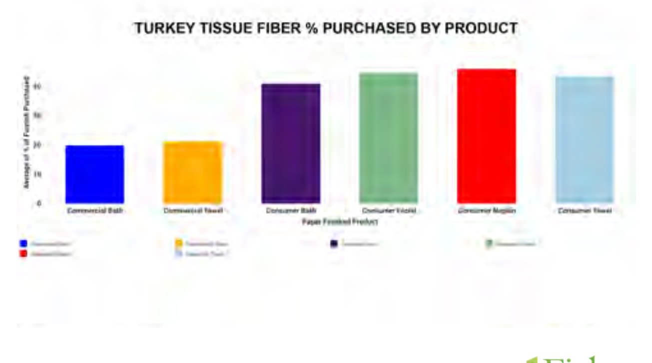

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Figure 7

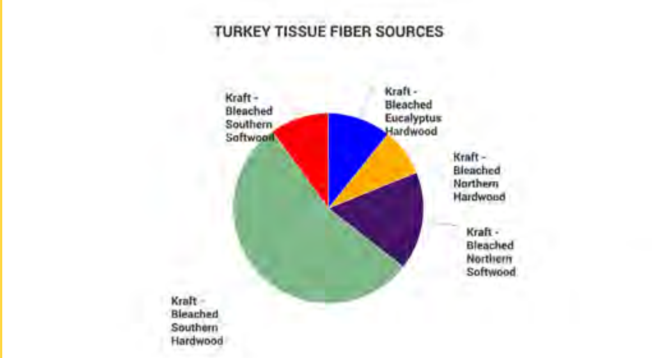

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Figure 8

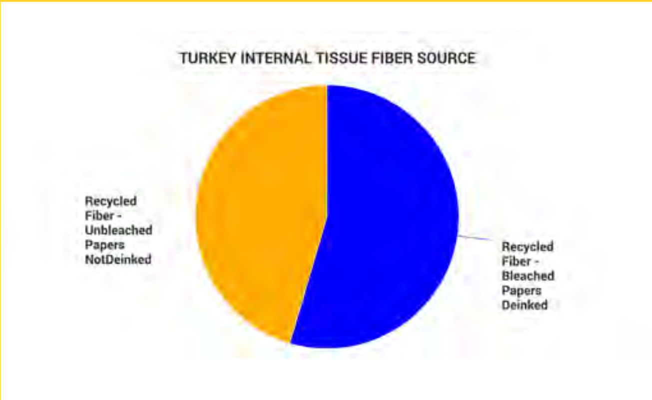

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Figure 9

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Figure 10

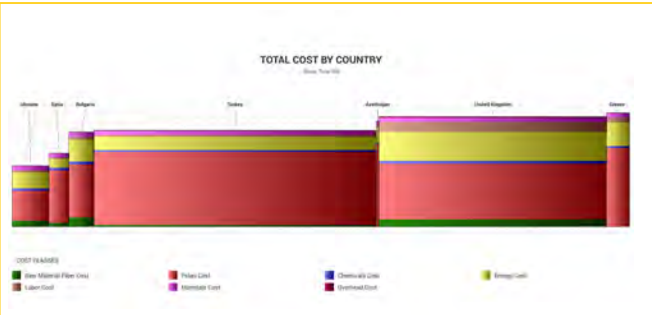

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Figure 11

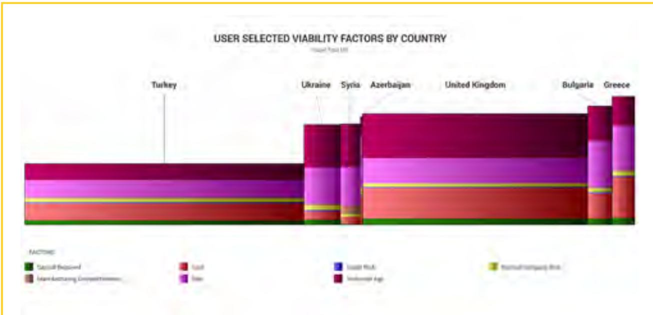

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Figure 12

FIGURES 14 AND 15 SHOW THE CURRENT EFFECTS OF THE COVID-19 PANDEMIC ON THE SELECTED TISSUE TRADING PARTNERS AS OF AUGUST 2020. THE UK MORTALITY RATE STANDS OUT FROM THE OTHERS, AND TURKEY IS IN THE LOWEST SET OF ACTIVE CASES PER MILLION OF THE POPULATION. WHILE NO COUNTRY CAN CLAIM ABSOLUTE SAFETY IN THE LONG RUN, TURKEY HAS WEATHERED THIS CRISIS BETTER THAN MOST.

impact Turkey's exports. Figure 13 shows the emissions per tonne of finished tissue for each of the countries in this set. Ukraine is lower because the carbon from purchased electricity is significantly lower. Turkey is in the middle of the group, below the United Kingdom, Greece, and Syria. This appears to be neither an advantage nor a disadvantage for Turkey's tissue business.

Figures 14 and 15 show the current effects of the COVID-19 pandemic on the selected tissue trading partners as of August 2020. The UK mortality rate stands out from the others, and Turkey is in the lowest set of active cases per million of the population.

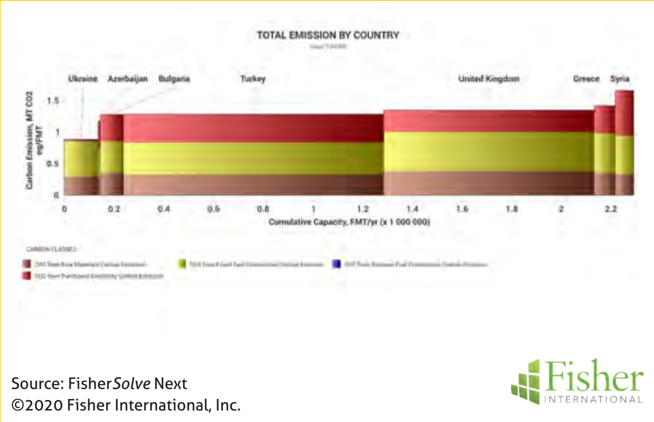


Figure 13

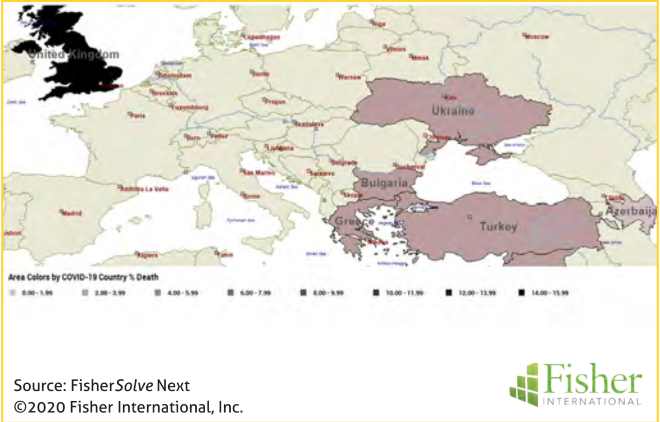


Figure 14

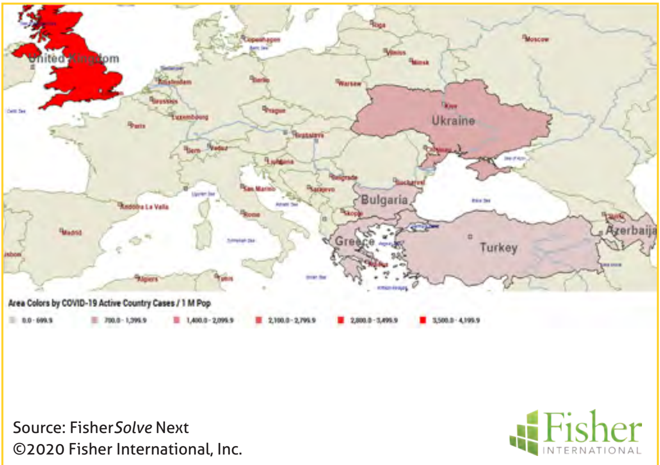


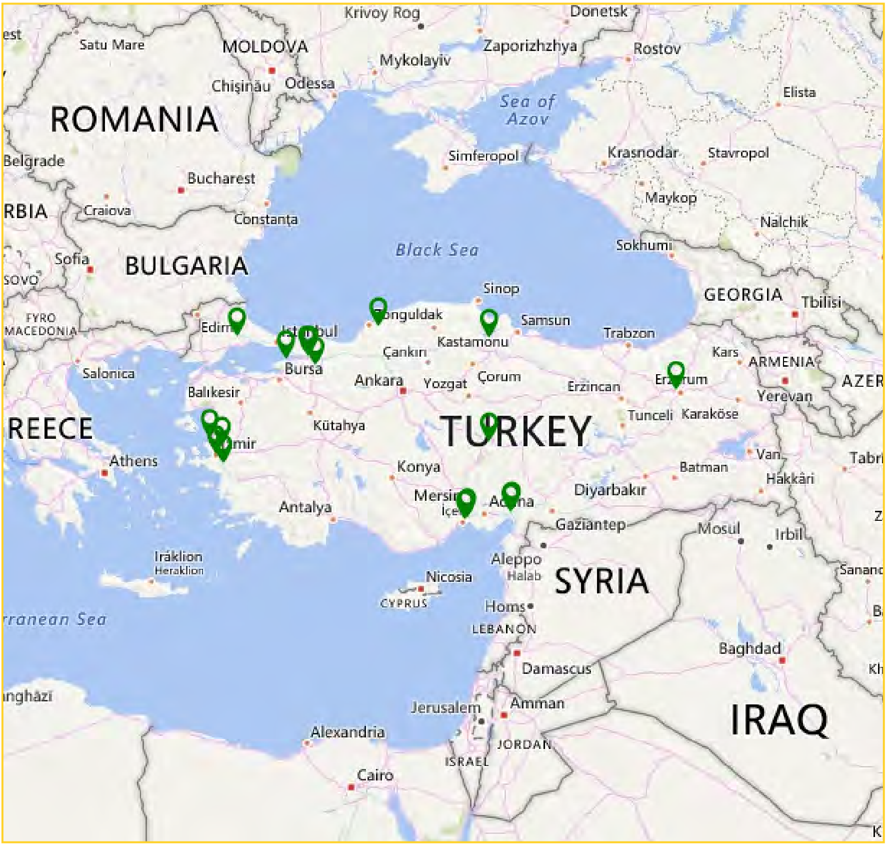
Figure 15

About Fisher International, Inc.
Fisher International, by virtue of its deep expertise in the pulp and paper industry, provides insights, intelligence, benchmarking, and modeling across myriad scenarios. By arming companies with the knowledge that will help them gain a better understanding of their strengths and help identify weaknesses, Fisher is helping businesses stave off challenges and better position themselves for long-term growth. For more information, visit www.fisheri.com, email info@fisheri.com or call +1 203.854.5390 (USA)

While no country can claim absolute safety in the long run, Turkey has weathered this crisis better than most.

Despite Turkey's currency challenges, its tissue business appears poised to survive and thrive. The high cost of imported fibre in local currency seems to be under control, and new tissue capacity provides excellent commercial viability for the future.

Analysis of competitive positions requires specifics on tissue producers and individual machines. This article presents a static picture summary of Turkey's tissue industry today. Fibre prices, exchange rates, and environmental regulations will change, providing some participants with advantages and others with new challenges. Turkish tissue mills will continue to change hands and perhaps consolidate; neighbouring countries may invest in tissue-making capacity, thus affecting Turkey's imports and exports.



Turkey Mills

'MULTIFUNCTIONAL' TISSUE AND DISCOUNTING HELPS TO MAINTAIN CONSUMER MARKET PERFORMANCE

After the depreciation of the Turkish Lira, the industry faces the continuing challenge of balancing retail price pressures with high production costs as the pandemic crisis plays out. Report by Svetlana Uduslivaia, Euromonitor International's head of tissue and hygiene industry.

With 4.5kg per capita in retail tissue, Turkey still has room for organic growth. Euromonitor International Industry Forecast model estimates the country's unmet potential at over 400,000 tonnes, or close to USD900m in incremental retail tissue sales.

However, tough economic times in Turkey led to sluggish sales in 2019, due to diminished consumer purchasing power. The prices of consumer tissue in the country went up, following depreciation of the Turkish Lira and resultant rising production costs.

Many consumers faced economic hardship and reduced spending where possible. Subsequently, most consumer tissue products, other than toilet paper, saw retail volume declines in 2019. At the same time, toilet paper is no longer regarded as a luxury by many households in Turkey. The category is yet to reach its full potential and urbanisation is still bringing in first-time buyers into the toilet paper aisles. Importantly, in times of budgetary cutbacks across households, many consumers turned to toilet paper as a multifunctional and cost-efficient alternative to other tissue products, thus helping to secure positive category performance.

In addition to category shifts, depressed household incomes in the country in 2019 worked in favour of products retailing at more affordable prices, including private label. Subsequently, BIM Birlesik Magazacilik – a popular discounter – gained further share of consumer tissue sales in 2019 through its private label tissue Blume.

Similarly, private label lines from other

Svetlana Uduslivaia
Euromonitor International's Head Of Tissue & Hygiene Industry

Table 1 *Source: Euromonitor International*

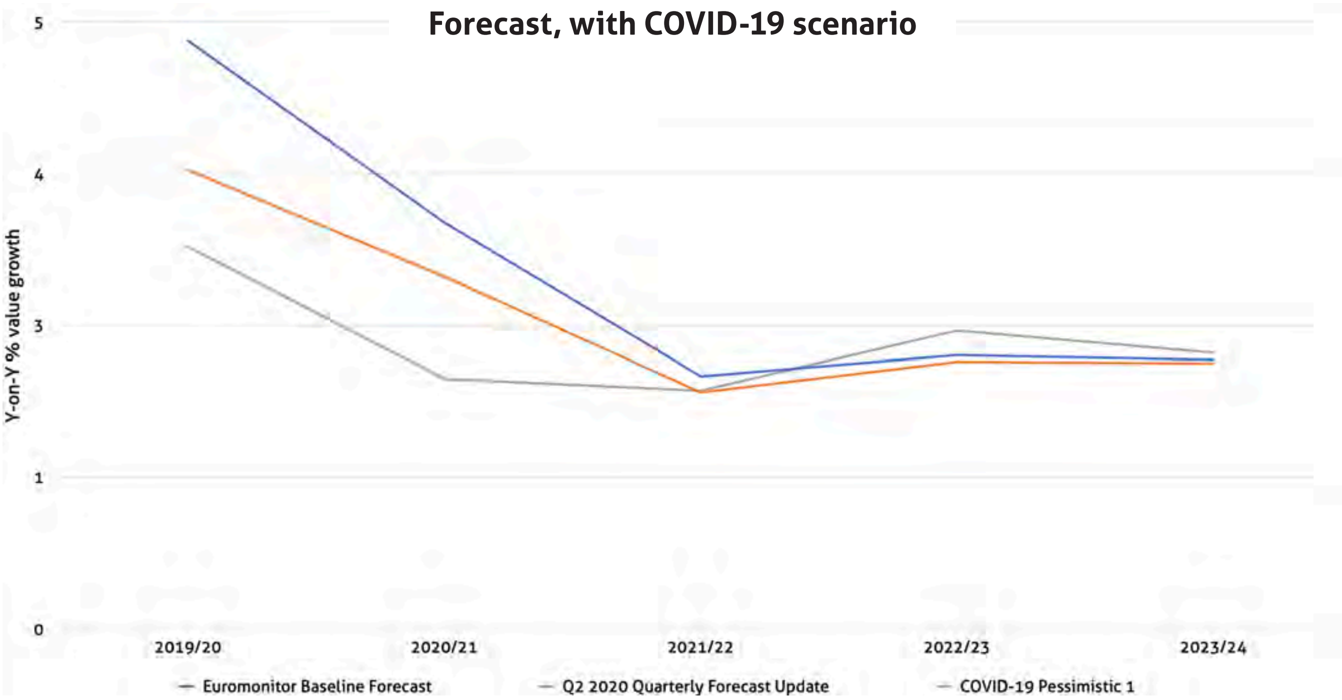


Table 2 *Source: Euromonitor International*

retail chains, such as A101, also saw growth, attributable to affordable prices and the retailers' extensive store networks. All in all, in 2019, private label tissue accounted for 41% value share of consumer tissue sales in Turkey. Euromonitor International Consumer Lifestyle survey released in 2020 indicated that 29% of consumers in Turkey planned to increase their spending on private label, compared to 28% of consumers who intended to do so in 2019.

The success of private label resulted in more intense price competition. However, weak Lira and rising product costs led to price increases across the broad range of branded and private label products, thus reducing somewhat the price gap between private label and the leading brands.

In the Covid-driven market conditions, retail tissue demand in Turkey spiked in 2020. Initial panic buying was followed by higher at-home consumption due to home seclusion. However, the economic impact of the pandemic is expected to result in heightened consumer price sensitivity, more emphasis on affordability, and reduced spending on non-essentials. While demand for toilet paper and paper towels will likely remain positive overall in 2020, other consumer tissue categories are expected to decline. Consumer tissue brands in Turkey will continue to face the challenge of balancing pricing pressures in retail with high production costs, resulting in the downward pressure on revenue growth and profit margins.

Euromonitor International Industry Forecasting Model estimates that Covid-19 conditions can shave close to 1% off the consumer tissue retail revenue growth in 2020 and further into 2021, assuming GDP decline range between -4.5% and -6.5% in 2020. Under current model, the trend is expected to stabilise in 2022 with slight uptake in subsequent years.

Industry Forecast Model

Note: Covid-19 Pessimistic 1 scenario assumes GDP growth range in -4.5% to -6.5% in 2020

Under difficult operating environment and in view of consumer price sensitivity, it is expected that companies that offer branded retail tissue, such as Eczacıbaşı Tüketim and Hayat Kimya, will see declines in volume share in short- to mid-term forecast, with households shifting more towards lower priced brands and private label. No notable branded entries are expected in retail tissue in the short- to mid-term, given expected low profitability due to high input costs and the strength of private label.

Putting further pressure on margins is the evolution of e-commerce in Turkey, which further enables households to compare prices and lower cost bulk purchases. While the share of online sales in Turkey's consumer tissue is still fairly small, e-commerce has been gaining pace. Euromonitor International lifestyle survey released in 2020 indicates that the top four motivators for Turkish consumers to buy products online include best price (49% of the respondents), variety of brands (43%), ability to order at any time from anywhere (42%), and free shipping (35%). These results align with many other markets – both developed and developing – where consumers often associate e-commerce not only with convenience but also with competitive prices, thus adding to complexity of developing viable digital strategies and aligned pricing across digital and physical retail as part of successful omni-channel solutions.

UNDER DIFFICULT OPERATING ENVIRONMENT AND IN VIEW OF CONSUMER PRICE SENSITIVITY, IT IS EXPECTED THAT COMPANIES THAT OFFER BRANDED RETAIL TISSUE, SUCH AS ECZACIBAŞI TÜKETIM AND HAYAT KIMYA, WILL SEE DECLINES IN VOLUME SHARE IN SHORT- TO MID-TERM FORECAST, WITH HOUSEHOLDS SHIFTING MORE TOWARDS LOWER PRICED BRANDS AND PRIVATE LABEL.

'CHANGED CONSUMER HABITS WILL BRING TURKEY'S PER CAPITA USAGE CLOSER TO THAT OF DEVELOPED COUNTRIES'

At 6.3kg in Turkey - 26kg in the US – the figure has risen during the pandemic and will remain higher permanently, says Bilge Çiftçi, Chief Marketing Officer, Eczacıbaşı Consumer Products. Report by TWM Senior Editor Helen Morris.

Bilge Çiftçi, Chief Marketing Officer of Eczacıbaşı Consumer Products, talks through a list of percentage swings – mainly positive - made across the company's portfolio. It's business management guru Peter Drucker's maxim put through its paces: 'You can't manage what you can't measure."

She cites a familiar record of surges and dips seen across the industry: paper towel sales - one of the most demanded products - increased by 30.8% compared March-April the year before; sales dropped in following months; in the second half that category then growing by 22%.

"According to our latest study, 30% of the consumers increased their use of paper towels after the pandemic. Toilet paper use rose by 7.5% in a similar manner. The sales of tissues and napkins shrunk compared to the previous year. With the increase of internet shopping after the pandemic, e-trade boomed and online sales reached 16% of the total sales and this led to an increase in the cleaning paper category's share within the total turnover by 400%.

With tissue consumption per capita in Turkey far behind levels in developed countries - close to 26kg in the USA, 16kg in Europe, 6.3kg in Turkey - she believes that with the increased awareness and sensitivity towards hygiene, some consumers' personal hygiene habits will change forever: "Consumption rates will rise accordingly and bring our levels closer to those of the developed countries. Since traditional towels are used by the entire household, it is only natural that hygienic paper towels began to replace them and are now preferred more. We think that this trend will also be permanent. We believe that the demand for personal hygiene products, as well as anti-bacterial and disinfectant wet tissues, will increase in the coming period."

New product offerings and investments

WITH TISSUE CONSUMPTION PER CAPITA IN TURKEY FAR BEHIND LEVELS IN DEVELOPED COUNTRIES – CLOSE TO 26KG IN THE USA, 16KG IN EUROPE, 6.3KG IN TURKEY – SHE BELIEVES THAT WITH THE INCREASED AWARENESS AND SENSITIVITY TOWARDS HYGIENE, SOME CONSUMERS' PERSONAL HYGIENE HABITS WILL CHANGE FOREVER.

Continued investments: *Eczacıbaşı Consumer Products has full confidence in the potential of the Turkish tissue market*

will be shaped accordingly. Çiftçi says that Eczacıbaşı Consumer Products is committed to being leaders in the provision of consumer products that are necessary for a modern, high-quality and healthy life. The hygiene, cleanliness and practicality offered by the products in its portfolio - especially during and after the pandemic - increased the demand. As a result, growth in all categories was higher than the rest of the industry.

"Just like the rest of the world, in Turkey we are also suffering economically due to the global pandemic. However, this is not the first time Turkey has encountered such problems and our country has always managed to overcome them. We are one of the biggest economies of the world and continue to grow every year. We have full confidence in the Turkish economy and its potential. Accordingly, we continue our investments in order to attain the goals we set.

"We believe that it is our responsibility to produce and offer services related to personal hygiene and cleaning products, which are the basic needs of society. As a result we have prioritised contributing to the society over profitability in all our business processes and activities. With the usefulness of our products and the efficiency of our services, we have always seen ourselves as a part of this struggle against the pandemic. We have worked and produced relentlessly in order to meet the demand in the hygiene products categories. According to cumulative data, we grew faster than the market in all our categories and as a result have increased our market share."

She lists products launched to meet that aim: "At Selpak, we launched anti-bacterial pocket wet wipes, which offer higher hygiene levels, a liquid detergent for babies at Uni Baby, and a Moisturising Lemon Cologne, which both softens and disinfects the skin at Selin Kolonya, Eczacıbaşı Professional, which caters to Away-from-Home consumption, sped up its product development efforts and added new products to its floor-surface disinfectant portfolio while stepping up its efforts in hospital and food hygiene areas.

Extensive research into AfH confirms the importance of health: "The AfH industry continues to grow. We have conducted comprehensive studies for years around our country and interviewed hotel guests and restaurant patrons. These researches showed us one thing even before Covid-19: the most important and first priority of clients in their selection of a hotel or restaurant has always been hygiene and sanitation. And now, hygiene is more important than ever.

"Businesses have begun serving their guests in a safer and healthier manner through various practices including training of their staff and imposing social distancing rules. It is clear that businesses that apply hygiene and public health rules to the maximum extent and take precautions accordingly will gain the trust of consumers and will be preferred more."

The pandemic changed many aspects of the industry: consumer behaviour and buying habits; e-commerce swiftly gained more importance; demand for hygiene products, disinfectant and anti-bacterial wet wipes will increase and paper towels will continue to replace traditional towels not only in kitchens but also in bathrooms.

"The post-pandemic recovery will no doubt reflect on pulp prices. China, the first country to be hit with the pandemic has already began to dust itself off. We believe that demand will increase. Practicality and the effectiveness of the disinfectant quality of the ever-rising hygiene and cleaning products are becoming more important. In order to meet this demand and the expectations, we are planning multiple product and category launches in the coming months.

"We believe that with the increased awareness and sensitivity towards hygiene, some of our personal hygiene habits will change forever and the consumption rates will rise accordingly, bringing our levels closer to those of the developed countries."

"WE BELIEVE THAT IT IS OUR RESPONSIBILITY TO PRODUCE AND OFFER SERVICES RELATED TO PERSONAL HYGIENE AND CLEANING PRODUCTS, WHICH ARE THE BASIC NEEDS OF SOCIETY. AS A RESULT WE HAVE PRIORITISED CONTRIBUTING TO THE SOCIETY OVER PROFITABILITY IN ALL OUR BUSINESS PROCESSES AND ACTIVITIES. WITH THE USEFULNESS OF OUR PRODUCTS AND THE EFFICIENCY OF OUR SERVICES, WE HAVE ALWAYS SEEN OURSELVES AS A PART OF THIS STRUGGLE AGAINST THE PANDEMIC."

TURKEY'S TISSUE LEADER SETS ITS SIGHTS ON BECOMING RUSSIA'S LARGEST PRODUCER

Already dominating in Eastern Europe, the Middle East and Africa, Hayat Kimya continues its impressive growth programme, and targeted pandemic response in manufacturing and marketing. Lutfi Aydın, Global Tissue Production Director, talked to TWM to explain his vision.

Despite the pandemic, we are happy to be on track with our tissue mill project in Russia and Turkey's new investments. In Russia, with the additional 70,000tpy capacity, we will become Russia's largest tissue producer. And in Turkey, also with new 70,000tpy capacity, we will maintain our leadership as the largest tissue producer. We plan to start operations in both mills in mid-2021.

As we are a global player and the largest tissue producer in the regions in which we operate – Eastern Europe, Middle East and Africa – we will continue our investments at full speed. In the next few months we will focus on completion of our two new investments for 2021, and then we will continue to maintain our growth momentum and leadership.

During the outbreak of Covid-19 in Turkey, the whole country united under one goal; keeping safe, keeping healthy. We could feel the sense of support for the common welfare, like elsewhere around the world. In Turkey, state and private sector collaboration was remarkable during the outbreak of the pandemic. Everyone opened up their means to respond quickly and act timely to create precautions. As Hayat is one of the leading companies in the hygiene industry with more than 30 years of experience in the category, on top of the financial support provided to state driven fundraising Hayat provided more than 250 tonnes of diaper, tissue, detergent product support to health authorities in 10 countries globally.

During 2020 we have seen consumer behaviour shift to extremes. There were several weeks where everyone hoarded toilet paper, paper towels and detergents in their homes. We have followed the consumer behaviour closely and adapted our production plans to closely follow what the consumer wants. We produced large packs, bulk packs, and focused on plain products rather than niche scented or coloured products, understanding the sensitivity of consumers.

This decision has also enabled us to provide more products as we increased our efficiency in capacity. After a couple of weeks, we now see that consumer behaviour has gone back to normal consumption levels.

The trend shows that the demand for high-quality, easy to carry, disposable hygiene products will continue. For example, based on hygiene concerns the use of paper towel will be preferred to towel usage. Similarly, handkerchief and napkins will continue to be preferred for single-use purposes. In Turkey, tissue usage level was around 1.5kg/person in 2000s, and now it is around 8.5kg/person (RISI). Every 83 households out of 100 use toilet paper and 78 households out of 100 uses paper towel.

At the initial stage of the outbreak, the AfH market was effected immediately. However, as business now continues as usual – with precautions required by health authorities – the market will come back into balance.

Quality has also become an increasingly important criteria, now that we are talking about personal health. As the total tissue market grows, we believe that the private label tissue market will also grow. However, consumers are becoming more conscious about product specifications. Innovation and quality has become a very important tool to differentiate.

The pandemic has also accelerated the natural shift in consumer behaviour in terms of shopping and the ways of shopping. We have readjusted our business models to respond to our consumers via e-commerce channels.

Guided by experience: *Lutfi Aydin*

These consumption shifts across many different sectors of the tissue industry will mean that the entire market will continue to grow steadily. As a leader in the industry, we will continue our investments and continue to introduce innovative products in response to what the consumer needs and wants.

Following consumer behaviour, needs and wants, and responding quickly in a crisis environment, we will be able understand, internalise and differentiate what behaviour will change and which will stick for a long time. Our experience will guide us during this period.

AT THE INITIAL STAGE OF THE OUTBREAK, THE AFH MARKET WAS EFFECTED IMMEDIATELY. HOWEVER, AS BUSINESS NOW CONTINUES AS USUAL – WITH PRECAUTIONS REQUIRED BY HEALTH AUTHORITIES – THE MARKET WILL COME BACK INTO BALANCE.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'GLOBAL TISSUE CONSUMPTION SET TO RISE BY 10–15% POST-PANDEMIC'

Will a new 'Era of Hygiene' emerge once Covid-19 is under control? Turkey's Lila Group Chairman Orhan Öğücü believes it will, after consumers have grown to rely on and trust tissue products more during a health crisis which has reached into every home.

Orhan Öğücü and the company's Çorlu, Tekirdağ-based plant: *"Our share in the exports of our industry is 34%. In the world, we export to more than 80 countries in five continents."*

TWM first met Lila Group Chairman Orhan Öğücü in 2012 at the company's site in Turkey. At the time, Öğücü said their aim was to be the number one in tissue production and trade in Turkey and within the region.

Eight years later, and this time over a conference call, he discusses the company's performance and planning ... turnover at US$200m at the end of 2019, growth at 50%, exports into 80 countries and more scheduled, energy consumption targeting a 30% reduction, and production capacity set to increase by 33% in 2021.

Consumers' hygienic understanding has changed, he says, and that will continue after the pandemic. This is a big opportunity for the tissue market. Report by TWM Senior Editor Helen Morris.

"We concluded 2019 with a turnover of over 200 million USD with an overall growth of over 50% thanks to the contributions of our new investment and increasing export figures. As for 2020, we aim to again demonstrate a growth of over 50% driven by our export strategy and new investments. Our share in the exports of our industry is 34%. In the world, we export to more than 80 countries in five continents.

My expectations for after the Covid-19 pandemic will be that, globally, we will see at least a 10-15% increase in tissue consumption. I am not just optimistic – that is what I really feel, and I see it. And the reasons are simple; our hygienic understanding has changed. Our behaviours have changed, we are washing our hands much more. We will be more careful, even after the pandemic. And this is a big opportunity for the tissue market.

Currently, we are thankful as the pandemic situation in Turkey is better than in parts of the world. Turkey has very closely followed the World Health Organisation's rules. Our president has kept us at home for several weeks and this has reduced many people from getting sick.

The number of cases here is coming down. Also, because of the location of Turkey, we have very strict control for the tourists. Whoever now comes to Turkey for tourism is checked at the airport, and everyone is kept in touch with to see where they are staying, where they are eating. But at the same time we also face the very difficult issue of the refugee crisis. In south-east Turkey, the number of refugees isn't decreasing, but the living conditions for them is very difficult. And if they catch the virus, it spreads to everyone because they are living in such close proximity. So we are seeing a lot of casualties in rural, low-income areas of Turkey, or from where the refugees are living.

Tourism – and the AfH market – has also been greatly impacted. We are seeing around 35% of the tourism capacity currently in Turkey. But even during our recent holiday period, almost all of the hotels were fully booked by Turkish people.

Before the pandemic, the total tissue and towel consumption was around 560,000tpy locally. And now I believe it has dropped to around 400-450,000tpy because of the AfH drop and also the drop in tourism. Will it go back? It varies from location to location. For low income regions they purchase small packs but more frequently. For high income, they try to keep some extra stock in case, so they purchase bigger packs. Normally 48 roll packs – which are common in the UK and also in America, but they weren't so common here in Turkey – now we also produce 48 roll packs.

Four new machines will be operating by the end of 2023

We will continue to be innovative and invest. We have four new machines that will be started up between now and the end of 2023, and three of them will have started up by the end of 2021. The Turkish hygienic tissue paper market worth is about three billion Turkish Liras, and Lila Group currently takes the first three positions in

Turkey. Although the company is one of the youngest companies in the domestic market, it is the first in the top three with its own brands. Nearly 90% of Lila Group's overall revenue came from the tissue business in 2019.

The company has gained a strong place in the FMCG sector offering an extensive range of products such as toilet rolls, towels, napkin and tissue with the Sofia, Nua, Maylo and Berrak brands. Our aim is to position our brands as one of the main market players with cost effective and innovative products developed to focus on the consumer requirements and needs.

We concluded 2019 with a turnover of over 200 million USD with an overall growth of over 50% thanks to the contributions of our new investment and increasing export figures. As for 2020, we aim to again demonstrate a growth of over 50% driven by our export strategy and new investments. Our share in the exports of our industry is 34%. In the world, we export to more than 80 countries in five continents. Exporting more than it imports contributes to the closing of our country's current account deficit.

We launched our new facility investment in March 2020. With the commissioning of our investment in this new facility with a total investment cost of 450 million Lira, we became the second biggest capacity integrated facility in Europe in the same campus. In Turkey, we have a total paper production capacity of 950,000tpy, and will reach 1,020,000tpy with our new plant investment. In addition, we have an export target of 100 million dollars and a total turnover of 300 million dollars. With our new facility, we have increased the existing paper production capacity by 50%, reaching a total capacity of 220,000 tonnes, as well as the capacity of branded products from 100,000 tonnes to 120,000 tonnes. This investment has also made a great contribution to meeting the increasing demand during Covid-19.

Turkey's tissue paper needs as a third from Lila Group are in position to meet alone. Today we aim to add at least 25-30 new countries to the 80 countries where we reach with our products. With our new investments, we anticipate that our export figure will reach $180m per year. We closed the last year with a turnover over one billion Turkish Liras and over 35% growth. Today, we export 75% of our production and 25% meet our consumers in the domestic market.

With our new investment which is planned to become operational in the second half of 2021, we will increase the company's total production capacity by 33%, making it the largest production centre not only in Turkey but also in Europe.

We made this investment because decreasing our energy consumption is a key issue for us. We are addressing this issue by adding new machines and upgrading our existing machines, which will reduce our energy consumption by increasing our overall energy efficiency. In terms of upgrades, all our existing machines are being prepared to reach the same level of efficiency as the latest machines, which require an increase in efficiency of around 15%. The latest machines and the upgraded machines will see energy consumption that is at least 30% lower than previous year. We are also investing in technology that allows us to collect waste energy and reuse it in other forms. This will offer us a large advantage over the competition.

The saved energy will be equal to the amount of energy consumed by 4,000 households per year.

Emphasising the technological improvements made in both existing and new investment plant will provide energy conservation. All our production lines are equipped with the latest technology and we've also updated our existing machines. With the help of these updates, the energy consumed by 4,000 households will be regained continuously, which means USD 1,500,000 worth of energy saving.

Water turbine within the machine mean major energy savings

Compared to the other examples globally, this new plant is a pioneer in several ways. Equipment called 'ReTurne' will be used in paper production machine for the first time in Turkey and it will use the energy of water used in the production via the turbine placed in the machine, resulting in saving electricity consumed per tonne. 'Visco Nip' will provide the energy saving in the drying process of the product. Additionally, with the help of a 'Redry' system, steam consumption has also been reduced. Moreover, no heat is released into the atmosphere as a waste energy, so it is eco-friendly. There will be also systems to retain rainwater. Owing to all these nature-friendly systems, there will be 15% saving in source utilisation and, currently, it has the most environmentally-friendly machines with the lowest carbon footprint.

Our future goal is to increase our capacity both in jumbo roll and in converted products. In 2020, our target is to reach over USD300 million in revenue. About 75% of our revenue is coming from exports today and we aim to reach 80-85% next year. Around 95% of our revenue will come from the tissue business.

We see that many companies are avoiding long term strategies. Other than the pandemic, we are seeing that technology, trends, economic and political balances can now change much faster. Our medium-term goal is to be among Turkey's top 100 industrial enterprises in 2023. In addition, to be one of the top five Turkish companies which operates in the FMCG (non-food) sector.

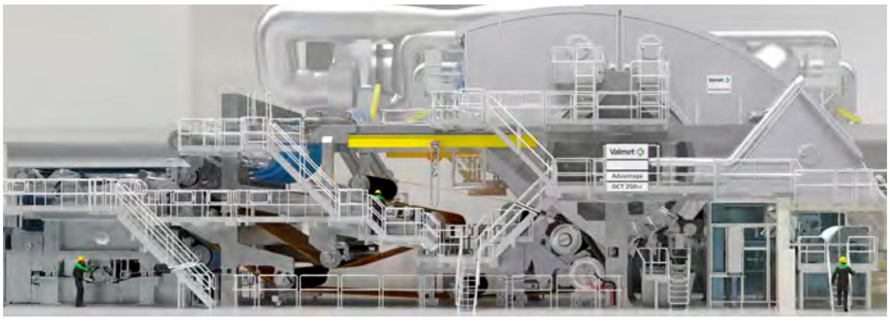
We always believe in the power of our country and its potential. When you look at the first years of our republic, we left the war as a country that lost everything. We lost a large population, especially our young population, in the war. However, with the determination of Mustafa Kemal Atatürk's superior leadership qualities, we have reached the level that will make our name heard in the world in a very short time. We experience the inevitable consequences of our geographical location from time to time, but we are getting stronger each time. Turkey always retains its attraction for foreign investors due to its geographical location and dynamic population. We continue to invest in our country in line with this belief.

During the pandemic, some business activities were closed, such as cafes, hairdressers, shopping centres, just as we saw all over the world. That situation affected workers and the economy as well. The government prepared an action list for the economy and these actions helped people to take a breath.

Lila Group has closely and continuously monitored the situation and has introduced comprehensive and rigorous hygiene policies in every one of our operations to ensure the health and safety of our employees. The company is committed to ensuring the continuity of our operations and supporting our customers, partners and the communities. Our hygienic products play a vital role in the lives of consumers all over the world.

Donated 2.5m Lira of supplies to public hospitals

Within the framework of our code of corporate and social responsibility, Lila Group has acted due to the increasing effects of the Covid-19 in Turkey. We



Substantial increase in demand: *Lila Group's third machine came on stream "at the right time"*

have donated 100,000 rolls (five million metres in length, 2.5 million units in total) of medical examination couch roll worth up to 2.5 million Lira to be used in public hospitals and ambulances under governance of the Ministry of Health of Republic of Turkey.

None of our investment decisions were postponed; we are prepared for even the worst scenario in terms of economy and health issues. This is the worst crisis since the First World War.

The importance of hygiene has really increased due to the pandemic. We have encountered four times the demand for our products. A 15% increase in consumption of household toilet roll in the first half of the year appeared suddenly. However, this situation is temporary. Covid-19 has increased the use for providing hygiene and stocking behaviour has also improved. According to Nielsen, the personal care category has increased during the pandemic. Shopping habits changed, multi-channel purchasing has increased, e-commerce usage experienced the biggest growth.

Now with the understanding of "what I can find" and "whatever I can stock", the understanding of "I should not consume outside" has emerged. Consumers are focused on products that they can stock and store for a long time (such as pasta, canned fish, frozen food, etc.) In addition, hygiene products took their place in the shopping lists due to the pandemic effect. It is at a record level compared to previous periods. With the effect of staying at home, sales of fruit teas, coffee and teas increased approximately 10 times. Online channels faced three times the usual purchase figures.

In the first two months of the pandemic, we received a lot of 'non-conventional' enquiries from countries such as Switzerland, Germany, Belgium, France, Sweden. It was also the first time we could export our products into countries such as these, countries that usually have no need to purchase converting products abroad at such high quantities.

Fortunately, our third machine came on stream at the right time when it started up in the second half of February. And in the beginning of March it was giving good production. It helped us a lot to fulfil the increase in demand.

The increase in tissue paper products has also affected the shifting consumption of consumer products instead of AfH products. This was not only toilet roll, but also the consumption of towels and napkins. With the effect of Covid-19, the use of pocket wipes and facial tissue for less surface contact has also increased.

We predict the use of bathroom and kitchen towels will now increase

New routines have entered into our lives; we wash our hands more often and use sterilisation materials. We saw a five times increase in tissue papers online shopping compared to last year.

We also faced an increase in the demand for pocket and facial tissue towels, especially for (hand hygiene) use. Hand towels – which are made of cloth in our homes – are not hygienic if they are used by more than one person. Therefore, we predict that the use of towels (including bathroom and kitchen) will increase, especially if they are individually used. Instead of air dryers (considering the problem of contamination by airborne droplets of Covid-19), towels and z-type folding will increase in shopping centres. Since towels are single use, they provide great convenience in terms of hygiene.

While the pandemic has been for many a painful experience, we have learned the importance of hygiene with the use of tissue paper. We have been able to meet the hygiene needs not only in our country, but also in other countries that needed it.

As the AfH market has been heavily hit with the outbreak of the pandemic, we believe that with the support of government, people, restaurants, schools and tourism, this sector will open again and AfH consumption will increase automatically.

We are also seeing a big shift towards private label products. This is mostly due to the economical hesitation of consumers as they prefer private label products more instead of branded products.

I'm not expecting any pulp price hikes; the pulp producers' inventory has increased by 11 days as an average of 46 days year-on-year. Therefore, we don't expect any pulp price hike. As AfH, printing and writing industries are still low, pulp consumption has been reduced.

Today the pulp market is very volatile, and we are hoping that the AfH consumption will come back again, along with vaccines for the virus.

With the development of tissue paper usage habits every year, our sector continues to grow. However, the supply of tissue paper products in Turkey (1.4 tonnes per year with new investments) remains well above demand. In Turkey, consumer products and AfH products usage was 560 tonnes before the pandemic, which means double of the current supply.

Despite the current consumption and growth, we believe that excess supply is a problem for our sector and, as the reflection of this increases, the price competition will be stronger. We observe that it is getting harder to achieve a sustainable margin day-by-day due to the increasing costs of reaching consumer, logistics and retailing (productivity per square metre).

We expect to exceed three billion lira in the 2020 total tissue paper market. It is likely that it will close with a 20% growth in tonnage and again with a consistent increase due to the revival of tourism in home consumption.

In this context, we expect that the most important factor in volume growth in 2020 will be the innovative products that will be introduced to the market and we do not expect a shrinkage as it is considered as the basic consumption material.

Since we are foreign-dependent in terms of raw materials, energy prices, especially pulp, all inputs affected by petroleum, packaging costs, freight and the increase in inflation are naturally critical for our industry.

On the other hand, if there is a big second wave of the pandemic, production processes may start to fail and this will be a challenge not just for the Lila Group but for the whole world. As a hygienic tissue paper products producer, our responsibility becomes even greater during pandemic.

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CONTINUOUS INNOVATION
TO DELIVER **CONSISTENT QUALITY**
AND **BEST SERVICE**

CONVENIENCE HYGIENE SOLUTION

- Private Label
- At Home / Retail
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"WE SAW A VERY SUBSTANTIAL SALES INCREASE IN A VERY SHORT TIME"

Alpay Yalçın, Export Sales and Operations Manager, Europap Tezol Kağit, says Turkey was more successful than many countries in combating the disease. Report by TWM Senior Editor Helen Morris.

Europap Tezol Kağit has two Crescent Former tissue mills at its Izmir plant, both supplied by Recard. PM1 has a deinking plant and PM2 runs only virgin grades. The two mills have a total capacity of around 60,000tpy. At the company's Mersin Plant, there is a Valmet DCT with a Kadant deinking plant that produces 36,000tpy.

At its converting facilities, there are PCMC and Fabio Perini-supplied machines for tissue and towel converting. Omet machines for used for the production of napkins. There is also some additional napkin and AfH machinery.

In terms of future investments, Alpay Yalçın says that even though the company has had to delay some of its actions due to the pandemic, its plans for its next tissue machine PM4 are still ongoing. "Most probably it will be installed at our Mersin plant, which we had built with expansion in mind. Construction already and we'll hopefully be announcing the details before the end of this year."

He adds that the company "has a good market": "We have a good reputation in white and coloured recycled productions, which we are still investing R&D in and searching for the new sources of waste paper. Additionally, we are seeing some more opportunity for finished products abroad.

"We are seeing a steady growth in AfH markets, especially in Turkey and the European regions and so we are still working on some opportunities in different sides of the world. We may invest in these regions by launching new tissue machines or converting machines, or both."

During the first two months of the pandemic, Yalçın says people rushed into supermarkets and bought whatever they find. "We saw a very substantial sales increase in a very short time and it caused a collapse in supply chains.

"The system recovered as quickly as it could and people also started to understand that there's no need to rush to stock such products, especially in cleaning and hygiene supplies. This caused a "short-term rise" in stock levels and we are now gradually seeing the balance of sales and stock coming back."

"I believe Turkey was more successful compared to many countries in the field of combating the disease. Health workers took their responsibilities very seriously and the government made the right decisions regarding restrictions and curfews. But as with all over the world, people have gone through a very different period in their lives."

He says that people are now understanding that cleaning paper provides "a cheaper and easier-to-use hygienic option than other alternatives". "I think this perception will trigger an increase in usage of tissue and towel products globally.

"Apart from the cyclical-sectoral opportunities, this alone is an opportunity and should be utilised in the best way by creating strategies on a regional basis."

He says that as sales in the AfH market had slowed down across Europe as a result of lockdowns, the company turned to find other markets that needed tissue and towel products.

This has led it to find new customers in new territories: "Now we are taking the opportunity to keep these relations alive in those territories while also re-starting the supply to our older markets. This will surely let us to invest in improving our capacity abroad and in Turkey."

He is certain that the longer-term effect of the pandemic on the tissue industry will mean that it continues to grow: "E-commerce has doubled in this period of outbreak and the use of tissue and towel products has spread. But we cannot ignore that a potential second wave of the pandemic as the biggest threat for all of the world. This may have devastating effects not only for our industry but also for world trade."

IN TERMS OF FUTURE INVESTMENTS, ALPAY YALÇIN SAYS THAT EVEN THOUGH THE COMPANY HAS HAD TO DELAY SOME OF ITS ACTIONS DUE TO THE PANDEMIC, ITS PLANS FOR ITS NEXT TISSUE MACHINE PM4 ARE STILL ONGOING. "MOST PROBABLY IT WILL BE INSTALLED AT OUR MERSIN PLANT, WHICH WE HAD BUILT WITH EXPANSION IN MIND. CONSTRUCTION ALREADY AND WE'LL HOPEFULLY BE ANNOUNCING THE DETAILS BEFORE THE END OF THIS YEAR."

FROM THE WAR YEARS' 'MAKE DO AND MEND' . . . TO SPEND, SPEND, SPEND TO BEAT COVID

Jo Horner grew up in north west England with her parents and five siblings. She enjoyed a varied career in education, working in Derbyshire, Nottinghamshire and Northamptonshire. She is retired.

My mother brought up our large family on a low budget in post-war Britain. The "Make Do and Mend" posters promoted by the government at the outbreak of the war resulted in many families recycling household items. An example of this in our home was to provide an on-going supply of toilet paper. Copies of the occasionally purchased daily local newspaper and my father's weekly indulgence of the "Football Pink" newspaper – it carried the latest football scores with the potential of a big monetary win on the 'Pools' – were cut up into hand sized squares by my older siblings. These were attached by a piece of string and hung next to the lavatory in the family bathroom.

The family budget increased after two of my siblings left home and we had the luxury of Izal, which was a hard, glossy paper toilet roll. I don't remember when soft toilet paper rolls became part of our everyday family life, but I do remember my mother's constant complaints about how much was being used and how expensive it was. Throughout my teenaged years tissue products didn't concern me. They were items I took for granted at home, provided by my mother.

Later as a student, I bought the cheapest brands. Evening and weekend stints as a barmaid helped to fund my regular trips to Europe, and further afield, when on many occasions the desire to get out of a very basic public toilet was more important than considering the quality of toilet paper I was using. How times have changed. The shelves of shops are stocked with a wealth of wonderful tissue products to enhance our lives.

On a daily basis I use toilet rolls, boxed tissues, and kitchen rolls. Influenced by my mother's budgeting habits I buy whichever toilet roll brand provides the most sheets per roll, with the exception of Christmas time, when I choose a themed design. This is purely for sentimental reasons, because when my own children were small I always bought themed toilet rolls and kitchen rolls decorated, for example, with characters from Raymond Briggs' much-loved TV film 'The Snowman,' or a Christmas tree design.

I always choose a patterned kitchen roll because I use one sheet folded up into a square as a napkin at mealtimes. Sheet-for-sheet the difference in price is negligible compared to a plain white kitchen roll, since I choose the cheapest brand of patterned kitchen roll. I have many other uses of kitchen roll around the home, including mopping up small spillages, wiping greasy or oily plates and pans before putting them into the dishwasher or hand washing them. Kitchen work surfaces need wiping down frequently during and after meal preparations and using kitchen roll is a hygienic, quick and easy method to keep on top of that job.

I buy high quality decorative paper napkins for use at Christmas and when friends come for a meal. I prefer using paper napkins because they can be disposed of as opposed to washing and ironing used cloth ones.

When I buy boxes of tissues I choose whichever brand provides the most per box. I always keep a box in the kitchen, bathroom and bedroom. I choose plain white. I buy small individual packs of tissues and always keep one in my handbag, and a couple of packs in the glove compartment of the car (cunningly, I also hide my bank cards inside the pack of tissues in my handbag. A thief wouldn't think of looking there.)

Covid-19 changed things. At the start of the pandemic, tissue items were difficult to source due to stockpiling by shoppers. I have changed how I shop, preferring to order online deliveries instead of my previous habit of a weekly shop in a supermarket.

I still compare the brands for value for money. I have noticed an increase in the amount of kitchen roll I'm using because I disinfect the kitchen work surfaces and bathroom surfaces more frequently than I used to before the pandemic.

Tissue products are readily available now, but I keep a couple of newspapers in the store cupboard and a length of string, just in case!

The four sisters: *With babe-in-arms Jo*


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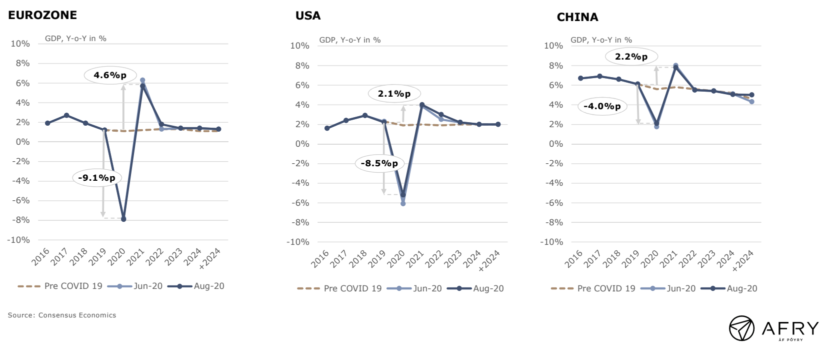
TISSUE PROVES ITS RESILIENCE AS THE PULP MARKET RESPONDS TO COVID-19

With predicted declines in GDP growth in leading economies up to -10%, lower and relatively stable pulp prices have proved to be the main boost to the industry's financial state of health. Pirkko Petäjä, Principal at AFRY Management Consulting, analyses performance in sectors and regions.

Pirkko Petäjä
Principal,
AFRY Management Consulting

Fiscal stimulus measures in USA and China have restored some growth in GDP, Europe however lags behind in policy application



Economic hit from Covid-19

In 2020, the world is facing a major economic hit from the Covid-19 fallout due to both the direct losses caused by the pandemic and the consequences of closing down society and reduced business activity, travel and trade. The ensuing major rise in unemployment reduces private spending, the corner stone of economic growth. A similar drop in annual GDP growth was seen during the financial crisis in 2009, but that time the crisis, even if it had lasted longer, was not quite as deep and global as now. The Eurozone and the US will have the strongest hit from Covid-19. The forecasted drop in GDP growth from the annual growth seen in 2019 will be -9.1 %-points and -8.5 %-points respectively. In both regions, the economies declined drastically in Q2 and the annual GDP growth will also be clearly negative, in some European countries by more than -10 %. In Europe, Southern Europe and the UK will see the biggest dives, while Germany and Northern Europe have been doing a little better.

The recovery policy in the US has clearly worked and improved the situation from the earlier forecasts in the beginning of summer. Asia has been hit less hard. For instance, in China, the economic growth has slowed down by around 4% points, but remains positive with about 2% growth. Most economic analysts expect the rebound in 2021 to be strong as there are high hopes that the second wave can be controlled better and that the investments postponed in 2020 will materialise in 2021. The rebound is foreseen to be weaker in the US than in Europe.

How has the pulp market reacted to the economic hit?

The pulp market correlates with economic development. Pulp demand typically decreases with a drop in economic activity. Demand and prices already started to decline in 2019. In 2020, the market continues to face multiple uncertainties, mainly due to the pandemic. The following main drivers apply -

Negative drivers:

The major negative drivers impacting the pulp market after the Covid-19 outbreak are the uncertainties linked to demand. While demand for market pulp has risen in the tissue end-use, the steep decline in the global graphic paper market is likely to more than offset the gains in other segments.

Pulp producer stocks were starting to trend down just before the Covid-19 outbreak, but were still above the long term average. Now the producer and port inventories remain high and the seasonal inventory declines of Q2 were this time not significant. Projected new rise of stocks in the supply chain over Q3 risks amplifying the challenges.

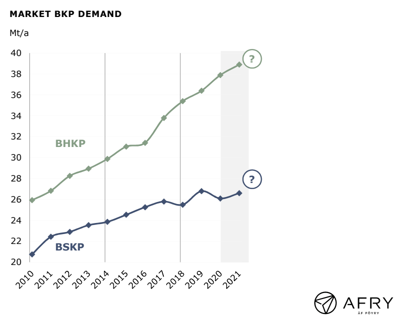
Market pulp supply has increased substantially with earlier integrated volumes offered to the market after paper machine closures and downtime. Pulp mill maintenance work, much of which is usually seen in Q2, has been postponed due to Covid-19 as such work brings more people to the mill-sites than normal production. Finally, very weak textile market and poor dissolving pulp prices have led to swings from dissolving to paper grade pulp.

Positive drivers:

The main positive driver in the near future is the limited supply increase, apart from the above-mentioned de-integration. The new project pipeline in 2020/2021 is thin. Also, some swing back from paper grades to dissolving pulp is expected once the textile market revives.

The other positive driver has already been the growing pulp demand in the tissue sector. Increased hygiene product demand

Demand pressures resulting from Covid-19 are overshadowing the pulp market in short-term



and switches from recovered paper to virgin fibre pulp as raw material both play a role as does the inventory build-up. However, the fast growth seen over the early months of the year is already moderating and the remainder of this year risks being more challenging. Moderate growth is projected in 2021 and beyond.

Other positive drivers include the

improving paying capability and recovery from Covid-19, especially in China. The Chinese economy remains strong enough to maintain the market pulp demand growth from that region.

Graphic paper global demand is expected to decline

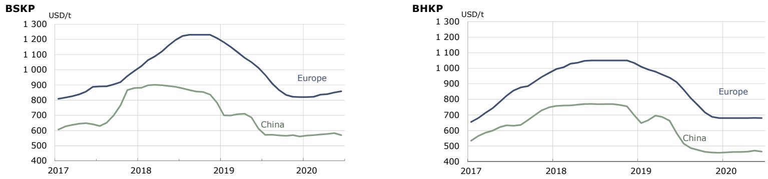
Graphic papers account for about 46% of world BKP use and 36% of the market BKP use. Graphic paper markets have a major impact on market pulp; when the paper market declines, it impacts the pulp demand directly and also when the integrated producers have to decrease their paper production, their pulp often ends up in market pulp supply. Already before Covid-19, graphic paper demand was declining at a rapid rate in Europe, in the US and in virtually all industrialised countries. The correlation to GDP growth was negative due to the shifts to technology/electronic media; the stronger the economic growth, the faster the demand decline. Typically, the decline in the western world has been -3-6 % annually.

Due to the Covid-19, a steep decline in graphic paper demand is forecast in all regions. A rebound to the normal deterioration speed will occur once normal activities resume, but the rate of demand decline in some of the segments, such as newsprint, may not get back to the lower rate of retreat seen before the crisis. Consequently, a step change to a lower level is expected for graphic paper demand in all regions. This will mean permanent demand drop for market pulp for this end-use. Impact from integrated pulp mills shipping more of their pulp to the market can also be bigger and more rapid than has been assumed before.

Impact on pulp prices

Pulp prices peaked in 2018 but started to decline at the end of the year and during 2019 prices came rapidly down to fairly low levels. Pulp prices rose slightly in the early months of this year in BSKP and remained flat in BHKP. After weakening in June-July, prices appear to have bottomed out in August with some price hikes announced from September.

Pulp prices appeared to bottom out by 2020 with expectations of upward movement; Covid-19 flattened this uptick. In Europe meaningful increases are foreseen only in early 2021



- Impact from global GDP decrease.
- European prices rose slowly until May in USD, weakened a bit in summer in USD, fairly substantially in EUR.
- Paper demand down in most, but not all grades.
- Supply is up where maintenance downtime, mainly Q2, cancelled, but a few mills are struggling to run.
- Producer stocks still strong.
- Weak dissolving pulp demand postpones conversions from paper grades/fluff pulp to dissolving.

Source: Foex Indexes (PIX)

- Similar negative impact from economic drivers.
- Producer and port stocks still strong and seasonal inventory decline in Q2 weak.
- Relatively even lower dissolving pulp prices have swung production in China & Indonesia from dissolving to paper grades BHKP.
- High pulp demand at tissue producers limited the price drop in the beginning of 2020. Also, problems in RCP logistics and COVID-driven closures of BCTMP support BHKP demand.

AFRY

Expectations of moderate upward movement in dollar prices during the remainder of the year or latest in early 2021 have risen, supported by the weakening of the US dollar. Prices in euro-terms are clearly lower now than in early 2020.

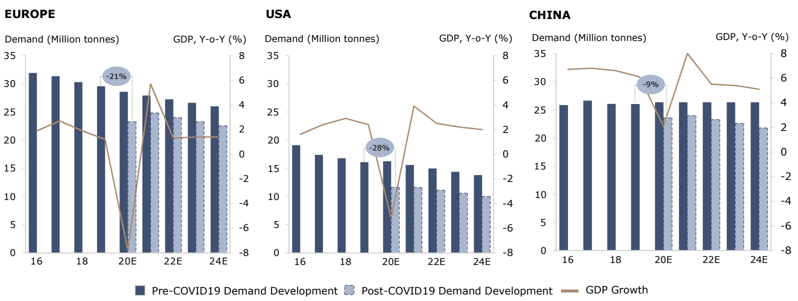
In the latest quotations, producers have announced price hikes in Chinese market. The pulp price increase appears to be starting in China, at least in BSKP. In Europe, most analysts foresee meaningful increases only in early 2021.

Indications for tissue producers

Profitability of tissue companies correlates quite strongly with the pulp price; the highest EBITDA margins have been reached when the pulp price has been low. From this perspective, year 2019 was good for tissue producers. As the pulp prices have remained flat, or fallen further, in the first half of 2020, this exceptional period has been from profitability perspective good for the tissue producers. Energy is the largest cost in paper manufacture after fibre. Also energy prices, both fuel and electricity have been generally on a downward trend due to the pandemic.

Contrary to chemical pulp, recovered fibre prices have in many cases increased as supply has been restricted with demand continuing. The interrupted collection and lockdown period have caused shortage of supply. From HG and other for tissue used grades' perspective the rapid decrease of graphic paper demand will cause a permanent disruption to the RCP supply and causes upward pressure on prices.

Graphic paper global demand expected to decline in 2020 due to COVID19
Steep decline is forecast in all regions



AFRY

Covid-19 has, due to the hoarding in the first months, impacted tissue demand in Q1 very positively in consumer, but in the beginning even in the AfH segment. Destocking started to show in May and tissue demand was typically below normal levels in the second quartile of the year.

The AfH sales were good over Q1 but the demand drop has been significant for Q2. The segment has been hit hard from the lockdowns, reduced travel and tourism, working from home, unemployment etc. Many of these factors are expected to continue impacting the AfH tissue demand towards the end of the year, even if some economic recovery is seen. Contrary to many other paper grades the tissue demand on annual basis is expected to remain almost normal in the consumer segment (that accounts for most of the market). As the pulp price due to the Covid-19 has remained low, the overall impact on tissue has been positive. Consumer segment, if reported separately, has typically reached very good financial results during the first half of the year.

However, the AfH segment continues to have problems with demand but also in supply, as the high RCP prices hit here the hardest. Typically, Q2 financial results are significantly below normal for all producers, especially so for the HoReCa segment. There are no winners in the pandemic situation, but the tissue producers - as all others whose business is based on essential needs - have, when it comes to demand, been fairly resilient to the economic crisis.

However, it is the low pulp price that has been the main contributor to the good financial performance during this exceptional period.

"THE COMBINATION OF HIGH SPEED AND LOW BASIS WEIGHT IS THE MOST CHALLENGING OPERATING CONDITION FOR A MODERN TISSUE PM"

Between 2014 and 2019, Canfor Pulp's Innovation Center (CPI) and paper machinery supplier Voith agreed to a cooperation where Canfor Pulp would supply NBSK pulps to a pilot tissue paper machine in São Paulo, Brazil. Here, Canfor's Paul Bicho, Manager CPI, and Wlad Janssen, Tissue Specialist, discuss the effects of NBSK on the properties of low basis weight facial tissue. A TWM report.

Paul Bicho
PhD Manager CPI

Wlad Janssen
Tissue Specialist

As a leading supplier of Northern Bleached Softwood Kraft (NBSK), Canfor Pulp's fibre basket is predominantly lodgepole pine, white spruce and sub-alpine fir. The short summers of central British Columbia, Canada, ensure that these tree species, noted for their fine fibres, have a higher proportion of thin-walled earlywood which gives the pulps a low coarseness.

Our main chip furnish are sawmill residual chips which have a higher proportion mature wood fibres. These chips have the longest fibres found in a tree. This combination of long, thin-walled fibres gives unique fibre characteristics which guarantee that our fibres will require less refining than most other commercial bleached softwood kraft pulps in order to achieve a target tensile strength. With Canfor NBSK pulps, tissue makers can achieve a 15% to 35% increase in tensile strength over other softwood kraft pulps at 600 mL (SR 20°).

The Canfor Pulp Innovation Center (CPI) provides direct technical support to customers and our mills. We help customers maximise the value that they can extract from fibres. This is achieved by showing customers how to reduce their refining while preserving strength. We do this via constant and systematic monitoring of our pulp quality by in-house refining using a LR40 – lab scale disk refiner (Fig 1) – which is more representative of industrial refining than conventional PFI beating curves, the implementation of PulpEye technology for on-line monitoring of fibre quality (fibre length, coarseness, fibre width, and brightness) (Fig 2), the specific testing of tissue products, pulp preparation, chemical

Fig 1: *CPI's LR40- lab disk refiner a versatile, accurate pilot instrument provides refining information that is applicable to mill scale.*

Fig 2: CPI's PulpEye used for rapid assessment of pulp and fibre properties such fibre length, fibre width, coarseness, kink and curl. Each kraft fibre line has a PulpEye providing real time data.

TISSUE PRODUCTS, IN PARTICULAR FACIAL AND TOILET TISSUES WHERE STRENGTH IS NOT AN IMPORTANT REQUIREMENT, CAN BE MADE WITHOUT LONG FIBRE. HOWEVER, THE HIGHEST QUALITY TISSUE PRODUCTS WHICH PROVIDE A COMBINATION OF SOFTNESS, STRENGTH, BULK AND ABSORPTION, NORMALLY CONTAIN A PORTION OF LONG FIBRE.

analysis and more.

The use of short fibres in tissue is growing mainly due to their lower cost and positive impact on softness. However, quality differences in hardwood pulps do exist, as their fibre properties are also dependent on the fibre quality of the wood source. Tissue products, in particular facial and toilet tissues where strength is not an important requirement, can be made without long fibre. However, the highest quality tissue products which provide a combination of softness, strength, bulk and absorption, normally contain a portion of long fibre.

The long fibre in the tissue sheet will help strength and if the fibre is flexible, it will easily conform to the sheet deformation in wet shaping processes as well as in embossing processes with the dry base sheet. The thin-walled Canfor Pulp NBSK pulps exhibit a higher degree of fibre flexibility than other, coarser pulps. This property, coupled with the higher strength offered by a high quality NBSK can help to maximise the amount of hardwood pulp in the furnish of premium quality tissue, while optimising the tissue properties and increasing production efficiencies.

The Voith tissue pilot PM

In 2014, CPI and Voith agreed to a cooperation where Canfor Pulp would supply NBSK pulps to the pilot tissue paper machine (PM) at the Voith Tissue Innovation Center (TIC) in São Paulo, Brazil. The two innovation centres agreed to the exchange of information with regard to the effect of pulp preparation and refining optimisation on tissue quality and PM operation.

The Voith tissue pilot PM is a state-of-the-art tissue dry crepe PM, with a crescent former configuration and a three-layer headbox. It has a 5.5m diameter Yankee, can make a 1m trim tissue sheet at speeds up to 2,500m/min (Fig 3). Voith technologies such as Atmos and Tissue-Lev were implemented by making equipment changes in the wet end as well as in the dry end. The PM configuration included the Voith Nipcoflex shoe press which was set up with a shoe tilt to emphasis bulk, rather than after press dryness. The line pressure (PLI) was kept constant.

Tissue pilot PM trials were conducted in Voith's TIC from 2014 to 2019, looking at how furnish affects tissue quality. Some of the trials conducted during this time period include:

- Evaluate Canfor Pulp in newly developed tissue technologies (Atmos, structured tissue);
- Optimisation trials to produce high softness facial and toilet tissue using Canfor NBSK pulps in combination with eucalyptus pulps;
- Effect of different eucalyptus pulps on tissue quality;
- Effect of different long fibred pulps with different fibre characteristics on tissue quality;
- Effect of separate and co-refining of long and short fibre furnishes on tissue quality (TW Miami March 2018);
- The partial substitution of hardwood kraft pulps with BCTMP in a towel grade.

There were many other trials over this time period. In this article we examine the effects of a Canfor's quality NBSK on the properties of low basis weight facial tissue.

Low basis weight trials

The combination of high speed and low basis weight is the most challenging operating condition for a modern tissue PM. In previous trials we had selected basis weights of 16g/m² for toilet tissue and 15 g/m² for facial, representing typical values for these two tissue categories. As facial tissue is the category with the highest demand for quality, it is usually made with high quality pulps in order to obtain the required softness, dry and wet strength, bulk and absorption. It was this tissue category that was targeted in the trials. The goal was to produce a high quality, low basis weight facial tissue with acceptable strength, stretch, bulk and softness.

The lowest basis weight for new tissue PM's is generally 10 g/m². At these lower basis weights, a commercial tissue paper machine will tend to be limited by speed, and not by drying capacity. To obtain sufficient strength, the softwood content as well as the pulp preparation and refining conditions become important. A "bulky" feel is hard to obtain. While producing 10 g/m² after creping A lower stretch (lower ratio of Yankee over reel speed and therefore less aggressive creping) was necessary to keep sufficient fibre on the felt and Yankee.

We used two layer stratified forming.

Fig 3: *Overview of the Voith tissue pilot PM*

The furnish used in the bottom layer was a mixture of a Brazilian bleached eucalyptus kraft pulp (short fibre) and Canfor's Intercon ECF90 (long fibre). The long fibre content in the tissue sheet was 20%, 30% or 40% for each of the basis weights (10, 12, 14 g/m^2). Refined eucalyptus was used in the top layer. The benefits of using two layer stratified forming at a basis weight of 10 g/m^2 can be questioned, as each layer becomes very light. Using unrefined eucalyptus in the top layer would decrease the strength. Further refining of the bottom layer can overcome this, but at the expense of bulk and softness.

Tissue properties were measured for each reel produced and subsequently analysed to assess the relationship with the softwood content. The pulps were separately refined using softwood and hardwood refiners. Batches of pulp were prepared for each of the headbox layers before running the tissue pilot PM. Pulp mix changes to the bottom layer were done by switching to a new mix batch, while the pulp in the top layer was kept the same.

The refining in the trials was based on a predetermined calculated specific energy at a given calculated intensity, the resulting freeness was measured. Generally, refining has a negative impact on softness. It is important to minimise it while still obtaining the desired tissue properties such as strength and bulk.

The energy that is actually transferred to the pulp, or specific refining energy, can be reduced by lowering the refining intensity (SEL or Specific Edge Load). In the trials, the short fibres were refined at an intensity of 0.3 J/m and a specific refining energy of 35 kWhr/t resulting in a freeness of 425 mL (SR 30 °). For the Canfor NBSK, a specific refining energy of 100 kWhr/t was used at an intensity of 1.0 J/m, to reach a freeness of 410-450 mL (SR 31-28°). It is noted that refining with a lower intensity may require some effort.

The effects of basis weight and long fibre content on strength and softness are summarised in Table 1. Caliper is not shown but ranged from 90 to 110μ and varied as function of basis weight. Stretch was 20%, except for 10 g/m^2 where it was lowered to 15%, given the amount of fibre on the felt and runnability of the PM. The highest softness was found with the 10 g/m^2 and 20% long fibre content tissue, the lowest softness with the 14 g/m^2 and 40% long fibre content tissue. The results confirm, that softness tends to vary inversely with basis weight and softwood content, though it is also affected by strength.

The results of the trials (Table 1) indicated an optimum level of softwood pulp of 30%. At this softwood content and a grammage of 12 g/m^2, tissue strength was well above the minimal strength requirements (400X200) and further optimisation of softwood content or grammages could be possible. Additional trials were done to explore optimisation of the tissue properties using this level. It was possible to use unrefined eucalyptus in the top layer at 14g/m^2 to increases the softness to 89.4 as there was sufficient strength in the sheet (440 X205). At lower basis weights, the strength was lacking and incorporating unrefined eucalyptus in the top layer was only possible by further refining of the bottom layer furnish. This resulted in a marked loss of bulk and softness, so this was not a viable option. Finally, running 10g/m^2 tissue at a high speed requires some effort and time. The normal PM speed was 1,600m/min but 2000m/min was tried and obtained for a short time. The experience in TIC is that a long fibre content has a positive impact on PM efficiency, but this requires longer run times on the PM for confirmation.

Overall, we demonstrated that a quality long fibre can have beneficial effects on high quality, low basis weight facial tissues.

This article was written for TWM by Paul Bicho, Ph.D, Manager, Optimisation and Innovation, Canfor Pulp Innovation, and Wlad Janssen, Tissue Specialist.

Long Fibre Content In The Tissue Sheet

Grammage (g/m^2)	40%	30%	20%
14	750x320 **83.0**	723x333 **79.6**	493x280 **83.7**
12	445x220 **85.5**	507x270 **84.7**	350x180 **87.4**
10	265x150 **87.8**	295x148 **86.1**	270x130 **88.2**

Table 1: *The effect of % softwood content and basis weight on MDxCD (gf/50mm) and TSA softness (bold text)*

FOCUS ON: OPTIMISING DEINK PLANT QUALITY AND YIELD

Office sources of high quality fibre have been hit by increased work-from-home across the world. Here Mark Christopher, global market development manager – tissue, Buckman, explains how deink plants can turn lower quality fibre into a viable option.

Mark Christopher
Global market development manager – tissue, Buckman

With the recent global shutdowns and work from home edicts being applied across vast swaths of the global economy, the sorted office pack (SOP) waste stream which is preferred by tissue makers has been significantly impacted. The reduction in office-based work has resulted in much less SOP being created and available for collection.

This reduction in supply is tempered somewhat by the concurrent reduction in demand for AfH tissue products, which is the predominant user of recycled fibre streams like SOP. Many companies began a significant stockpiling of SOP furnish during the early stages of the shutdowns in anticipation of potential shortages which created a tighter supply early and is now resulting in an easing of demand as they begin to draw down their inventory.

The situation is highly variable and other producers are finding it difficult to source SOP or they can only do so at elevated prices. This then forces them to consider less uniform and more highly contaminated sources of recycled fibre. Moving to lower quality recycled furnishes puts pressure on the deink plant to maintain brightness, dirt and stickies levels without sacrificing yield.

Doing so relies on three key functions of the deink plant: detachment of ink from the fibre, separation of the ink and contaminants from the fibre stream, and finally rejection of the ink and contaminants. This paper will examine these key process steps and provide guidance on how to optimise them.

Ink detachment

Ink detachment predominately takes place in the pulper. The bales of collected paper are placed into the pulper along with clarified process water, and mechanical energy is applied to create rotor-to-fibre and fibre-to-fibre friction that separates them from each other as well as separating the coatings and inks from the fibre surface. This is critical because it is not possible to remove ink through the rest of the process unless it has been first detached from the fibre. Along with fibre exiting the pulper, there are two types of ink:

1. **Free ink:** detached ink free floating in the slurry which now has the potential to be separated and rejected.
2. **Bound ink:** ink that remains attached to the fibre surface or has been trapped within the fibre lumen.

It stands to reason that the more ink we can detach from the fibre, the higher the potential final brightness that can be achieved. Driving detachment in the pulp is not a linear benefit curve due to two detrimental impacts of longer pulper times:

1. Longer pulper times in the pursuit of increased detachment reduce throughput. The negative financial impact of this is obvious.
2. More time in the pulper does not just detach more ink but serves to break down the ink, coating and contaminants into smaller and smaller particle sizes. This in turn makes the removal of the particles across screening and flotation more difficult. The water soluble and the very smallest of these ink particles can actually be absorbed into the lumen of the fibres along with the water as they hydrate and swell. (1) This results in a darkening of the fibre that is irreversible.

The ideal situation for the operator is to be able to get as much ink detached as quickly as possible.

The most common practice for balancing pulper output with ink detachment is to add a deinking surfactant chemistry into the pulper. The surfactant provides three benefits:

1. It acts as a penetrant drawing water with it. This speeds up disruption of the surface coatings and the hydrogen bonding structure of the base sheets, facilitating the breakdown of the bales into a pulp slurry.
2. It segregates ink and contaminants, preventing their redeposition on the surface.
3. It envelops very small ink particles, preventing them from being adsorbed into the fibre lumen and causing irreversible fibre darkening.

UNDER DIFFICULT OPERATING ENVIRONMENT AND IN VIEW OF CONSUMER PRICE SENSITIVITY, IT IS EXPECTED THAT COMPANIES THAT OFFER BRANDED RETAIL TISSUE, SUCH AS ECZACIBASI TUKETIM AND HAYAT KIMYA, WILL SEE DECLINES IN VOLUME SHARE IN SHORT- TO MID-TERM FORECAST, WITH HOUSEHOLDS SHIFTING MORE TOWARDS LOWER PRICED BRANDS AND PRIVATE LABEL.

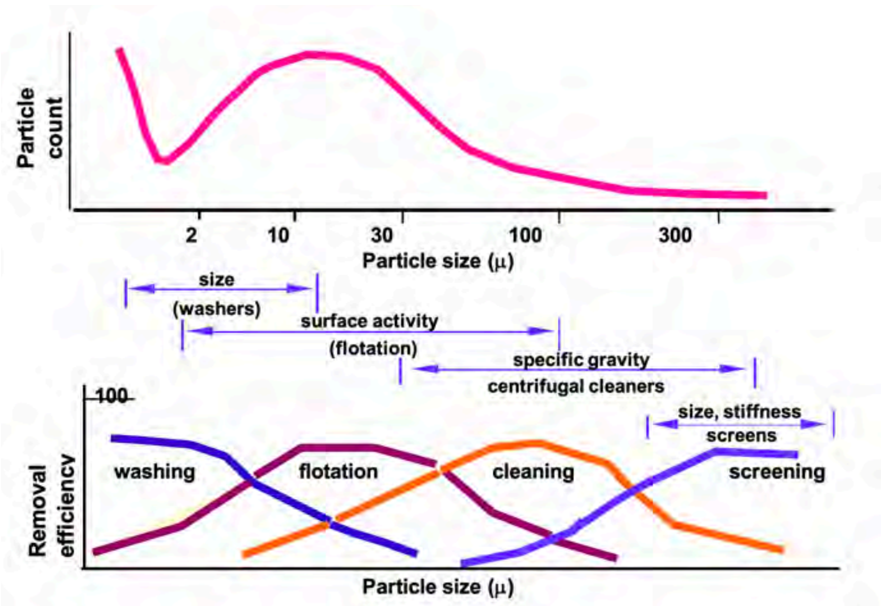


Figure 1: *Deinking process steps and their efficiencies*

By removing more ink and segregating it, the brightness ceiling of the pulp is increased, resulting in higher final brightness even at equal ink removal efficiencies.

Other parameters than can be adjusted to impact detachment in the pulper include:

- **Temperature:** higher temperature will speed up the pulping process.
- **pH:** higher pH, often achieved via the addition of caustic or even bicarbonate, will speed up the process. However, higher pH has been proven to disperse stickies.

Optimising your pulping operation while monitoring ink detachment efficiency as outlined above allows for higher potential final brightness of your pulp by reducing bound ink concentration.

Having detached the ink from the fibre, we must now separate it, and other contaminants, from the fibre stream. Deinking plants are designed with various processes to remove all types and sizes of contaminants.

The most commonly employed process steps and their relative efficiencies at removing contaminants based on their nature and size are depicted in the diagram from Richard Venditti from NCSU (Figure 1).

Screening and cleaning

The screening and cleaning unit operations of the deink plant separate contaminants from the fibre slurry based on size and weight respectively.

They are typically set up in cascading banks such that rejects are re-screened/ re-cleaned in several steps to further ensure concentration of the contaminants and reduce yield loss. Particles that have a specific gravity greater or lower than water can be effectively rejected with cleaning stages, but this does not include ink and many stickies.

Low consistency slotted screening is considered to be the best approach for stickies removal by screens, and this is the approach most mills employ (3). These screens will be able to separate most contaminants including stickies which are larger than the nominal slot size, but ink and stickies smaller than this threshold will pass through. Even larger stickies particles can extrude through screen holes and slots that are smaller than the stickies particle itself (6).

Another methodology often applied to address these stickies in the deink plant is with enzymatic technology that breaks down and changes the surface characteristics of the stickies, rendering them more hydrophilic.

This approach has been successfully applied for over 20 years in the recycled operations of pulp, packaging and tissue mills. Because enzyme technology is specific, other chemistries and operations are not impacted. Operational benefits include increased ink detachment and significantly reduced stickies counts in the pulp as shown in the mill application below (Firgure 2).

Flotation

The flotation deinking process works by using air bubbles floated through a pulp suspension. Hydrophobic contaminants like ink and stickies within the pulp slurry preferentially attach to these bubbles as they rise to the top of the suspension. This results in a concentration of the undesirable contaminants within a foam layer at the top of the flotation cell.

The number of bubbles and their size distribution within both the pulp slurry and the foam layer which sits on top impacts ink removal efficiency and yield loss (2).

Let us consider the bubble/contaminant interaction: As a bubble approaches a particle to within a certain minimum distance, which we denote as the "critical gap," gc, then it is assumed that strong attractive forces take over via a range of methods whereby bubble/ particle attachment takes place as depicted in the Figure 3 (4).

Proper optimisation and operation of the air system and its injectors is important in order to ensure high specific air volume. Bubble structure and stability in the cell

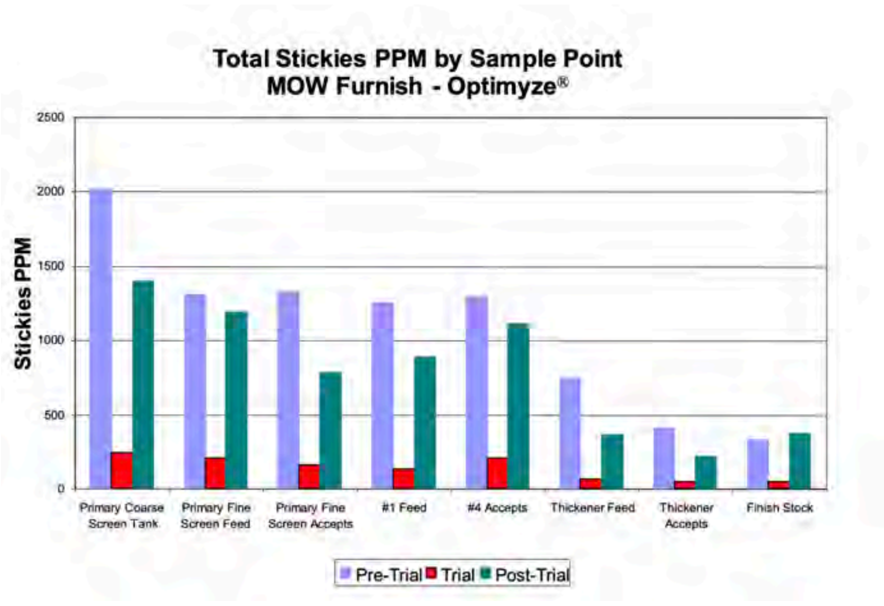


Figure 2: *Total Stickies prevalence by sample point*

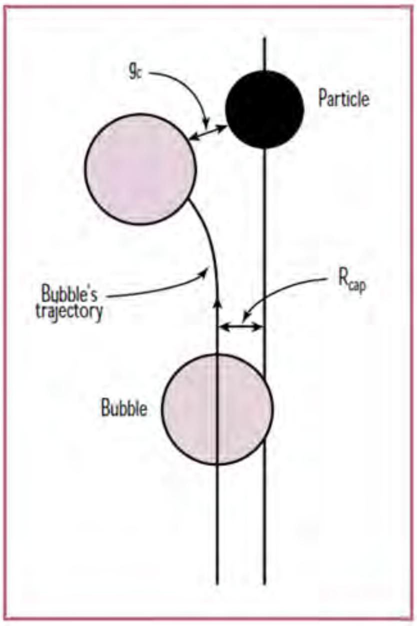


Figure 3: *Schematic representation of a relative bubble/particle trajectory and definition of the critical gap, gc, and capture radius, Rcap*

froth, which is rejected, impacts yield as well. Highly stable foam bubbles do not allow floated fibre to drop down through the foam froth and back into the cell for acceptance. When no surfactant is employed, the air bubbles still float ink, but the resulting froth is much more stable. This often has the effect of driving lower cell level set points which reduces ink rejection or more fibre carryover which reduces yield.

Modern deinking surfactants are intended to not just improve the repulping process but carry through to the flotation cells where they contribute to more efficient collection of ink by the air and a foam froth that breaks down more easily. The effect is the ability to get higher brightness at lower equivalent yield loss as shown in the Figure 4.

An often ignored benefit of flotation is the highly effective removal of stickies from low quality pulp. We have already explained how the basic mechanism of flotation is one driven by hydrophobic forces, and stickies are highly hydrophobic particles.

AN OFTEN IGNORED BENEFIT OF FLOTATION IS THE HIGHLY EFFECTIVE REMOVAL OF STICKIES FROM LOW QUALITY PULP. WE HAVE ALREADY EXPLAINED HOW THE BASIC MECHANISM OF FLOTATION IS ONE DRIVEN BY HYDROPHOBIC FORCES, AND STICKIES ARE HIGHLY HYDROPHOBIC PARTICLES. APPLICATION OF THE CORRECT DEINKING SURFACTANT IN THE CELLS IMPROVES STICKIES COLLECTION AND REJECTION IN THESE SYSTEMS.

Application of the correct deinking surfactant in the cells improves stickies collection and rejection in these systems. It has been shown by Tinna Sarja that upwards of 80% of microstickies can be removed via flotation (7).

Specific air volume (SAV) is defined as the volume of air per unit mass of solids in the flotation cell feed, generally expressed as cm3/gms or L/Kg. We can see that changing either the air volume or the cell consistency will result in a change in the SAV. Depending on the floatation equipment design, the operator may or may not have the ability to impact air volume, but all operations can dictate targeted consistency of operation of the cells.

The importance of this will become apparent as we examine how to most effectively concentrate the ink and other contaminants in the reject stream such that we can maintain brightness at lower overall yield loss.

It has been shown by Peters and Romigio (5) that improved concentration of ink can be obtained at high flotation cell operating consistencies as long as the SAV can be increased along with it. In other words, maintaining and improving ink removal at higher flotcell consistencies requires ever larger volumes of air.

Yield considerations

Although ash losses via flotation are not as sensitive to cell consistency, applying the approach above, which increases SAV, will increase ash loss via flotation. This is generally less of a concern for the tissue maker because it is overridden by the benefits of the overall pulp quality, and the reduced ash content in itself provides benefits.

- Ash content preserved across flotation will be rejected in subsequent washing steps.
- Ash content pushed forward to the machine is extremely difficult to retain in the high sheer, low consistency forming process used by tissue machines.
- Ash retained in the sheet reduces perceived softness and increases dusting.

Washing

One or more washing stages may be present within a deink plant layout. A washing stage in a deink plant is technically just a thickening stage, although depending on the plant configuration, a clarified water source may be used to dilute the stock just prior to the thickening stage. In washing, ink and contaminant removal efficiency is a function of the percent increase in consistency across the stage. A washer that takes a pulp slurry from 1% consistency to 2% consistency has removed 50% of the water. If we assume the ink was evenly dispersed in the water and no mat filtering occurred, we would expect a 50% ink removal. Of course, depending on the design of the equipment, different amounts of mat filtering are exhibited, and as such larger particles of ink and contaminants are trapped within the mat and not rejected here.

Washing operation efficiency can be improved via the following mechanisms:

1. Reducing inlet consistency. Almost invariably, lower inlet consistency into a washing stage will result in greater consistency increase across the stage (greater fraction of ink separated) as well an improvement in the removal at

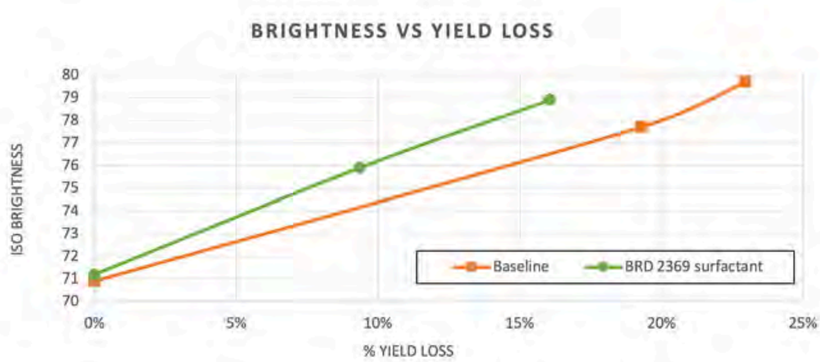


Figure 4: *Effects of deinking surfactants on brightness vs. yield loss*

the larger particle end of the removal spectrum.

2. Dispersing surfactants, which can break down ink particles or enzymatic stickies technology which can reduce stickies size range, improve washing efficiency of both.

Rejection of the contaminants

Having detached and separated the contaminants from the pulp substrate, we must now reject them from the system. Some stages, like secondary flotation rejects, may be sent directly to effluent. Other reject streams may employ a thickening stage(s) to maximise water recovery and reuse and minimise disposal costs of the rejects fraction. This is commonly done via a DAF operation treated with a polymeric program to maximise the quality of the reclaimed clarified water stream.

The DAF rejects themselves may be sent to a further thickening stage such as a screw press. These systems are often referred to as the kidneys of the deink plant. It is important to monitor and control the quality of the clarified water streams as they will be reintroduced into your system.

When water systems are contaminated with ink or stickies, problems with quality and operational efficiency will result. The objective is for the contaminants to leave mill with minimal loss of fibre or water.

Understanding what each operational unit is designed to accomplish - whether it is pulping, screening, cleaning or other operation - and determining the efficiency of each pays easy dividends.

With careful attention to detachment, separation and removal of contaminants, lower quality fibre sources are now a viable option thus easing the burden of the constant search for higher quality fibre. A properly operated deink plant relies on a good design, proper operation of the equipment and the proper use of chemistry.

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This article was written for TWM by Mark Christopher, global market development manager – tissue, Buckman.

80%

Microstickies that can be removed via flotation

5

Distinct ink removal process steps within the deink plant

20

Years that enzymatic technology has been successfully applied in recycled operations

35%

Tissue fibre furnish share that is recycled pulp

MILLENNIALS, MALES, AND COVID-19: DRIVING THE CHANGES IN PRIVATE LABEL TISSUE DEMAND

US women - who drive up to 80% of all consumer purchasing decisions - are traditionally more loyal to national tissue brands. However, with the effects of the pandemic, their buying habits may be pushing them towards private label tissue products, a segment already favoured more by men. Report by Sivashankari Bharathi, Analyst, and Sanna Sosa, Senior Principal, AFRY Management Consulting

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Over the past few years, demand for private label tissue products has been growing primarily due to millennials. Male consumers in particular are more open to buying private label tissue products than female shoppers, hence driving the adoption and private label segment growth for tissue products.

However, during the Covid-19 'paper panic', more US consumers, regardless of age or gender, were exposed to private label products as for many, they were the only option on the supermarket shelves.

The US retail tissue segment expects to grow from around six million metric tonnes to seven million metric tonnes over the next decade. The increase is primarily driven by the stable growth in population, and what we believe will be a permanent increase in tissue products consumed at homes. Retail tissue demand soared throughout the initial months of the pandemic due to increasing stay-at-home orders, business closures, and people working from home.

However, Away-from-Home tissue received the shorter end of the stick with a dramatic decline of 30% in the early part of 2020 as travel, leisure activities and education closed down.

Private label tissue consumption has been on a rising trend in the US. At-home private label bath tissue share is expected to grow by 10%-points within the next decade. Private label growth is highly attributable to millennials, who have proven that they are not as loyal to national brands as their parents and grandparents have been.

According to a study by the National Retail Federation, looking at private label products overall 77% of millennials reported they would not want to buy the

DURING THE COVID-19 'PAPER PANIC', MORE US CONSUMERS, REGARDLESS OF AGE OR GENDER, WERE EXPOSED TO PRIVATE LABEL PRODUCTS AS FOR MANY, THEY WERE THE ONLY OPTION ON THE SUPERMARKET SHELVES.

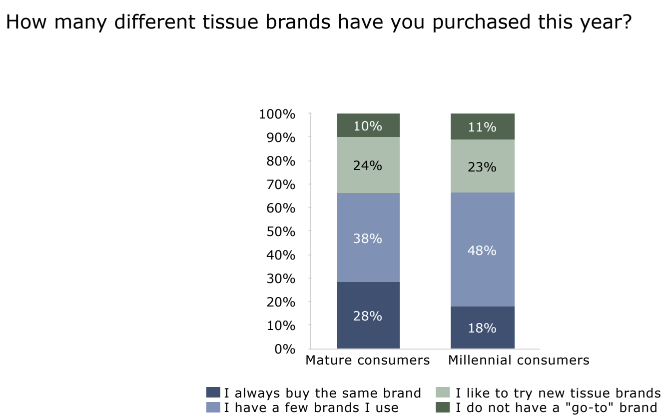
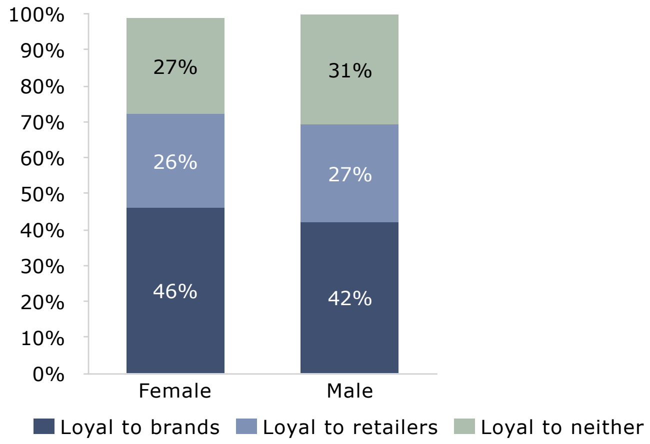


Figure 1: Number of tissue brands purchased; mature vs. millennial consumers

In general, are you more loyal to consumer product brands, or are you more loyal to certain retailers



AFRY

Figure 2: *Brand vs. retailer loyalty; female vs. male*

same products their parents did. Some 88% further said that private label products are just as good as the others. Millennials have opted for these products due to their cheaper price point and similar quality to national brands.

To adhere to millennials and their lifestyles, retailers have been heavily investing in their private label programme development. Some retailers have invested by creating new private label brands, while others have added new products to their existing private label portfolios. For example, in 2019, Kroger introduced more than 750 new items into its private label portfolio.

American retailer Target announced a new private label for its grocer section and now houses more than 45 different private label brands across all of its product categories sold. Supermarket Albertsons aims to reach a private label penetration level of 30%, and retail drugstore chain Rite Aid stated that it eventually wants private label sales to make up around 23% of its total sales.

Retailers have also been introducing new private label tissue brands. In 2019, the Wakefern Food Corporation introduced new tissue private label brand Paperbird into their lineup. Along with Wakefern, in May pharmacy chain Walgreens launched Complete Home, a label that consists of tissue, plastic, and household cleaning products.

To better understand the changing tissue purchasing trends, AFRY Management Consulting recently surveyed 568 US consumers. Questions asked were regarding bath and paper towel tissue products, tissue purchasing habits, and how consumers adjusted their tissue product purchasing during the pandemic's 'paper panic'.

Millennials driving tissue private label demand

Millennials are the core age demographic – and the primary reason why private labels products have grown over the last few years. Although mature consumers (defined here as consumers over the age of 37) sometimes purchase private label products, they tend to stick with the brands they typically use and have used for years.

Based on our consumer survey, 28% of mature consumers only buy one specific tissue brand vs. only 18% of millennials having such loyalty. Unlike mature consumers, millennials are more likely to experiment and have more than one brand they are comfortable buying [Fig.1].

When analysing the national versus private label purchases, 43% of mature respondents answered that they primarily buy private label tissue products. Millennials on the other hand were 50% likely to favour private label tissue products over national brand products.

Along with brand loyalty, mature consumers ranked quality as a key reason why they were not as prone to purchasing private label products. They also noted that if the quality were to increase, they would be more open to buying private label products.

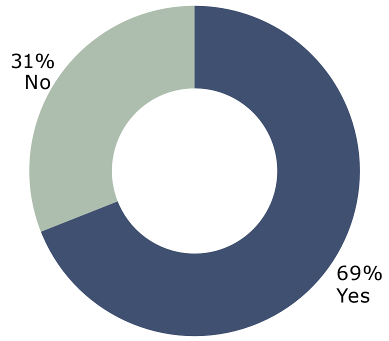
Overall, millennials are far more open and willing to purchase private label tissue products due to their lower cost and similarity to national brands in terms of perceived product quality.

Males are more open to buying private label products than females

Women drive 70-80% of all consumer purchasing decisions within the US.

TO ADHERE TO MILLENNIALS AND THEIR LIFESTYLES, RETAILERS HAVE BEEN HEAVILY INVESTING IN THEIR PRIVATE LABEL PROGRAMME DEVELOPMENT. SOME RETAILERS HAVE INVESTED BY CREATING NEW PRIVATE LABEL BRANDS, WHILE OTHERS HAVE ADDED NEW PRODUCTS TO THEIR EXISTING PRIVATE LABEL PORTFOLIOS. FOR EXAMPLE, IN 2019, KROGER INTRODUCED MORE THAN 750 NEW ITEMS INTO ITS PRIVATE LABEL PORTFOLIO.

Did you purchase private label tissue products during the pandemic?



AFRY

Figure 3: *Private label tissue purchases during the pandemic*

According to a Nielsen study, 85% of women say that if they like a brand, they will remain loyal to it. AFRY's survey aligned with Nielsen's finding, as 46% of females in our survey reported that they were more loyal to brands than retailers [Fig. 2]. Some 42% of men also stated that they were loyal to brands, but males were also 31% likely to answer that they were not loyal to brands or retailers.

Looking at private label tissue brands versus national brand products, 53% of males were more likely to pick private label tissue products versus 41% for women. The majority of women, around 59%, typically purchased national brand tissue products instead. It seems that male consumers are more open to trying private label products and value price over quality more than females do.

Covid-19 impact on tissue purchasing habits

With the pandemic still looming over our heads, the tissue sector has had an exciting two quarters. As the pandemic's initial months drove a spike in tissue sales due to the pandemic's stockpiling that swept across the nation, consumers ransacked both e-commerce and brick and mortar stores, and only left empty shelves where tissue products previously sat.

Tissue product manufacturers have been reporting incredible sales growth caused by the pandemic. For instance, during Clearwater's company Q2 earnings call, they reported having shipped up to 16 million tissue cases, up 28% from a year ago.

Based on our survey, 61% of consumers purchased a new tissue paper brand during the pandemic, and 69% of the respondents reported to have bought private label tissue products [Fig.3], indicating an increase in private label tissue consumption.

Mature consumers and females, who are not used to purchasing new tissue brands, had a sharp turn in purchasing behaviour due to the pandemic, primarily driven by product availability.

Due to the lack of availability of most tissue brands and the decline in household incomes caused by all-time high unemployment levels, regardless of gender and age demographics, consumers resorted to purchasing private label products.

This new exposure to private label tissue products could also increase female and mature consumers' purchases of private label products long term if they get a positive experience of the private label tissue products' value in terms of price and quality.

A look into the future

We expect retail tissue private label demand to be on the silver lining of the pandemic's disruption across markets and sectors of our economy and industries. Tissue private label brands will continue to gain market share, with continued private label segment expansion highly attributable to millennials driving the segment.

Along with millennials, males will continue to be more inclined to buy private label tissue products than more brand-loyal female shoppers.

Retailers are also continuing to push and expand their private label programmes, including the launch of private label tissue products.

LOOKING AT PRIVATE LABEL TISSUE BRANDS VERSUS NATIONAL BRAND PRODUCTS, 53% OF MALES WERE MORE LIKELY TO PICK PRIVATE LABEL TISSUE PRODUCTS VERSUS 41% FOR WOMEN. THE MAJORITY OF WOMEN, AROUND 59%, TYPICALLY PURCHASED NATIONAL BRAND TISSUE PRODUCTS INSTEAD. IT SEEMS THAT MALE CONSUMERS ARE MORE OPEN TO TRYING PRIVATE LABEL PRODUCTS AND VALUE PRICE OVER QUALITY MORE THAN FEMALES DO.

Excellent cleaning of forming and press fabrics
CleanLine Excell

+ Flexibility to replace high cost raw material
+ Higher performance of forming and press fabrics
+ Less pinholing of the sheet
+ Less cleaning chemicals
+ Greater fabric permeability retention
+ Better uniformity and subsequent moisture profile
+ Less water and energy consumption
+ Better runnability

The Voith CleanLine Excell is a very effective traversing cleaning system that gives consistent and uniform cleaning of the surface and structure of forming and press fabrics to create a wider operating window for tissue production.

THE MULTIPLE REASONS WHY CONSUMERS INCREASINGLY CHOOSE PRIVATE LABEL OVER NATIONAL BRANDS

Private label tissue and discounting stores are on an apparently unstoppable rise in the US and around the world. Research conducted by the Tissue Pack Innovation Lab, North Carolina State University, USA, assesses how much hygiene plays an important part. A TWM report.

When consumers choose private label over national brands they are weighing a variety of preferences ... price, marketing recognition, convenience and looks. A study has also revealed that the price consumers are prepared to pay for bath tissue and paper towels is highly correlated to how soft or absorbent the product is. Water absorbency was selected as the primary performance indicator. Overall, this feature is the main price driver for paper towels within the consumer tissue segment, the research claims. How other attributes of paper towels will influence the consumers' behaviour with the increased health issues arising from the Covid-19 pandemic is no doubt a subject for future study.

Researchers at the Tissue Pack Innovation Lab, North Carolina State University, looked at the reasons behind the rise of private label tissue products in the US. Particularly hygiene tissue products in the consumer segment, such as bath tissue and paper towels, which represent one of the articles with the highest impact on the sustained growth of private labels.

The success of private labels in consumer-packaged goods is attributed to their ability to offer the best trade-off between product performance and shelf price. Consumers perceive that private labels are reasonably priced for the performance offered, making them feel that they obtain higher value for their money.

However, the analysis questions: when national brands and private labels are compared on a performance basis in the context of hygiene tissue, which product group truly offers the best value? Is the feeling of satisfaction experienced by consumers well-founded?

Tissue manufacturers strive to tailor their operations to maximize properties based on fibre selection, strength, chemical additives, and manufacturing technology. While structural properties are critical for the overall performance of a tissue product, consumers are prepared to pay a premium for improved absorbency or softness.

In general, national brands show a combination of high shelf prices and high performance, which is an agreement between what consumers are charged and the product they get, i.e., there is a dollar value on each gram of water absorbed.

When compared to national brands, private labels sold by retailers show inferior performance (14% lower) with a lower shelf price (23% lower). On the other hand, private labels sold by wholesale clubs behave differently to their competitors. Tissue products offered at wholesale clubs tend to be underpriced (41% less than national brands) related to the performance they offer (water absorbency only 5% below national brands).

They provide a trade-off, the research says, between performance and shelf price which aligns with the strategy of wholesale clubs where major profits come from subscriptions while they pass on the savings to subscribers. Bulk selling plays a role in pricing, which considerably decrease shelf price.

National brands are performance-driven, where high shelf prices are required to compensate for high R&D, expenses and manufacturing costs. Attributes such as brand name, promotion, distribution channel, and sales volume play a critical role in determining the final price. But at the same time the performance of private label is also increasing.

According to the research: "In the case of multinational retailers such as Walmart, which offer most of the US product portfolio, their products (store private label) need to outperform national brands directly on the shelf. In a practical sense, this means that consumers have the chance to stand in front of the shelf, stare at the whole market offering, and compare head-to-head the different products before making a final purchase decision. These circumstances force multinational retailers to have highly competitive prices and reasonable performance in order to win market share from their competitors. Otherwise, consumers will likely pick the traditional national brand."

Millennials' preferences, the growth in the number of retail stores, trade-off pricing, and bulk buying go a long way to explaining the phenomenon rise.

Research by: Franklin Zambrano, Antonio Suarez, Hasan Jameel, Richard Venditti, Ronalds Gonzalez. National Brands vs. Private Labels: An Analysis of Market Dynamics for Hygiene Tissue in the United States.

Tissue Pack Innovation Lab at North Carolina State University (www.go.ncsu.edu/tissue).

Private label: Market share facts

Hygiene tissue products such as bath tissue and paper towels have approximately 27% of the current tissue market share in the US, 55% in Europe and 35% worldwide.

Consumer-packaged goods growing at a CAGR of 2.5% since 2015 versus the 1% growth reported for national brands.

Compared to national brands, private labels sold by retailers show 14% lower performance with a 23% lower shelf price.

Private labels sold by wholesale clubs tend to be 41% lower priced compared to national brands, with water absorbency only 5% lower.

Millennials' general spending power – $600 billion each year in the US and projected to reach $1.4 trillion this year (30% of total retail sales) – is a major driver.

60% of Millennials prefer private labels – shopping carts contain 32% private labels compared to the 25% found in the average shopping cart.

They also force sales-volume mix – for example replacing napkins with paper towels as a more functional and multipurpose.

US discount grocery stores increased by 45% 2013 to 2018.

ALDI, with 2,500 stores estimated by the end of 2022, projected to become America's third largest supermarket chain behind Walmart and Kroger.

WHILE THERE HAVE BEEN NO QUEUES FOR TISSUE IN INDIA UNDER PANDEMIC, PERSONAL AND HOUSEHOLD CONSUMPTION HAVE RISEN DRAMATICALLY

Century Pulp and Paper, headquartered in New Delhi, is India's tissue leader. When TWM visited in 2016, the company felt the key to tissue's take off could be in smaller cities where they expected to see great progress in the adoption of tissue habits in daily life. Now, domestic demand is growing up to 15% year-on-year – and boosted even further by the pandemic. Senior Editor Helen Morris reports Chief Executive Jaiprakash Narain's vision for the future.

One of our main objectives is to up the momentum of tissue and towel-use in India. We want to make the use of these products a habit and make more people aware of how hygiene is related to tissue. We have started our own retail brand with the name of Century in order to help bring awareness of these products to the people here.

But the objective is not just to sell retail products, the objective is to increase awareness so that the consumption of tissue will go up across India.

In 2019, we were seeing 12% growth of tissue across the country. The recycled tissue sector here is growing at around 12%, but if you take other segments such as the virgin tissue paper segment, it's growing at around 15% year on year.

We are currently the only Indian-based manufacturer which can manufacture everything under one roof. We were established in 1984 and we have grown from producing 50tpd to 1,400tpd capacity. That is the kind of journey we have covered to date. We produce wood pulp, writing and printing paper from recycled paper.

For tissue production, we produce napkins, facial tissue, kitchen towel and toilet paper, and this made up 7-8% of the total production.

However, in October 2020, we expect our new Valmet-supplied TM to start up at our plant in Lalkua. This will boost our total tissue production by 100% and market share from 8% to 15%, adding 36,000tpy of high-quality facial tissue, toilet tissue, kitchen towel and napkin grades to our current production capacity. We are the first company in India to install a tissue line equipped with an Advantage ViscoNip press, a move that enables us to produce high quality tissue products for our local and export markets. This investment will confirm our position as the number one tissue manufacturer in India.

Following the outbreak of Covid-19, we have seen similar growth in all tissue markets, but the one segment that has been badly impacted is the AfH market. AfH was 65%, while personal consumption of tissue was in the range of 35% of total consumption.

During the pandemic, personal consumption has gone up very fast. However, I'm sure that once the market opens again, AfH will again be back into normal operation. I'm anticipating AfH will be back in the next 3-4 months as India is starting to re-open now.

Once this happens, I'm sure there will be a shortage of tissue in our country. Because that 65% segment was not there despite from that our machine was full.

We are anticipating that whatever new capacity is coming, it will be absorbed by the market very quickly. Our new capacity that's starting in October will take care of the market demand. Once this machine covers around 75%, production again we will decide for another expansion. Our main objective is to stay as a leader in the tissue market in this country.

We also see great potential to export. We are currently exporting around 45-50% of our production because we can produce a very high quality of product that is in high demand in the countries surrounding India. We currently export to all of the Gulf countries and several African countries as well as Sri Lanka.

***Jaiprakash Narain:** Century Pulp and Paper*

Demand is growing there also, but additional capacity is also coming, especially in the Gulf countries. That doesn't affect us directly as our own domestic demand is also growing.

Over the past few months with the pandemic, we have seen a definite increase in tissue consumption. However, we still don't have that type of demand we have seen in other countries where people are queuing up for tissue, we don't yet have that type of scenario of demand in India.

But for personal consumption and household consumption, it has gone up in the last three months in a very dramatic

THE OBJECTIVE IS NOT JUST TO SELL RETAIL PRODUCTS, THE OBJECTIVE IS TO INCREASE AWARENESS SO THAT THE CONSUMPTION OF TISSUE WILL GO UP ACROSS INDIA.

way. And online, absolutely we are seeing online deliveries increasing in a big way as people stay at home and prioritise this way of buying.

In the next two to three years we are concentrating on increasing the awareness of tissue and hygiene. We want to create a portfolio based on hygiene so that we can take an entire basket of products into the market and sell it altogether. And in particular, we want to be the market leader in this country in terms of tissue manufacturing and distribution.

At the same time, we also want to expand into the personal care sector with tissue and packaging products. We don't have any plans to expand in writing, printing or the other segments as we are not seeing growth in these markets.

I am optimistic that once we have our second TM up and running to cover the demand here, quite likely we will move to another expansion. We have the land available at various regions of the country so we can expand our footprint, not necessarily at this location, but at other locations so that export may then be easier for us.

IN THE NEXT TWO TO THREE YEARS WE ARE CONCENTRATING ON INCREASING THE AWARENESS OF TISSUE AND HYGIENE. WE WANT TO CREATE A PORTFOLIO BASED ON HYGIENE SO THAT WE CAN TAKE AN ENTIRE BASKET OF PRODUCTS INTO THE SUPERMARKET AND SELL IT ALTOGETHER. AND IN PARTICULAR, WE WANT TO BE THE MARKET LEADER IN THIS COUNTRY IN TERMS OF TISSUE MANUFACTURING AND DISTRIBUTION.

Our main challenge remains that we need to increase awareness for the Indian customer so that consumption levels go up. Then we will be able to easily and comfortably sell this product in this market. For this we need to create an awareness programme through social media because we see a lot of potential for this product in this county, because the tissue consumption base is very low right now.

In the last four years the use of tissue has definitely gradually been increasing. Four years ago it was 65/70g per capita, now it has crossed over to 100g per capita. So it's growing. I am also anticipating that with this pandemic, it will increase even further.

Once tissue use becomes a normal hygienic habit for the Indian people, then it will become part of a daily routine consumption. Hygiene awareness is increasing, and that is making India is a very high potential market for tissue.

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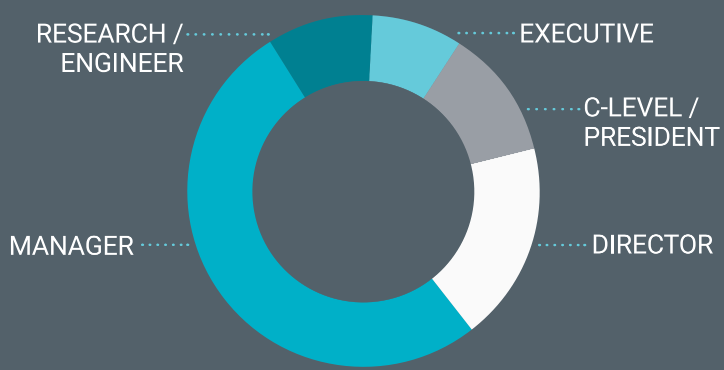

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