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JANUARY/FEBRUARY 2017

The independent news provider for the global tissue business

TWM
TISSUE WORLD MAGAZINE

SCANDINAVIA
How innovation and premiumisation propel the battle for survival in the advanced market.
Regional Report

PLUS
MARKETISSUES
Eurozone tissue surged as oil prices slumped. Will it last?

SPECIAL FEATURE Projects Survey 2016-2017
TWM charts all new global tissue capacity announced, ordered or started-up

TECHNICAL THEME Paper Machine
Top names predict advances

WORLD NEWS
Latest fall-out from China's dash to build

UBM
MCI (P) 051/12/2016

Duni's Thomas Lööb talks to TWM about the company's Rexcell Tissue & Airlaid site, Scandinavian tissue trends and table top innovations in our Operations Report

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TWM

TISSUE WORLD MAGAZINE

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www.tissueworldmagazine.com

Cover: PURPLEPRINT Creative

It does exactly what it says on the scented packaging

I like the sound of Vårt Finaste Toalettpapper. It means, as I'm sure you will have worked out, Our Finest Toilet Paper.

It was launched by the grocery retailer ICA Sverige in Sweden in 2015, and it reminds me of a clever advertising strategy in the UK by a paint maker who declared that its product "Does exactly what it says on the tin." Simple, clear, and apparently straight-talking honesty.

Vårt Finaste Toalettpapper is what it says – 5-ply, in contrast to the more typical 3- or 4-ply. When ICA Sverige cunningly says 'vart' it hopes that everyone thinks that it's not just ICA Sverige's finaste, but also Sweden's finaste.

This is the evolving battle in Scandinavia's mature market where tissue penetration is as near to complete as makes no difference, but where competition has been so fierce that there have been victims.

Mills have gone, long traditions have been streamlined. Innovation and premiumisation are intense. Efficiency has been upgraded and new markets have been sought.

By the stunning Drammensfjord in Norway a battle for survival is being won in what used to be known as Paper Valley. On the brink of closure in 2013, Vajda-Papir Scandinavia is now transformed ... expanding exports and planning 15% sales growth.

High-end quality is the driving force at Sweden's Rexcell Tissue & Airlaid. TWM journeyed among the elk, lakes, forests and snow in Västra Götaland to reach Skåpafors – it's as exotic as it sounds – but by managing director Stefan Åbom's own admission is located "close to nowhere."

This is another survival story. After toughing it out, a modern mill is setting its sights outward from nowhere further into Europe, and now Asia, with its leading table top products. TWM's Scandinavia Regional Report tells a fascinating story.

Tissue World Milan set to break all the records

Hurry, because space is already at a premium. As Italy is set to host the world's largest gathering of tissue professionals for the first time from 10-12 April 2017, 90% of exhibition space is taken as of December with more than 185 leading companies from 30 countries.

Alongside the trade show, Tissue World Milan will feature a three-day conference: Change is the only constant, but where is the tipping point?

The Senior Management Symposium (SMS) will take place on 10 April and will examine crucial issues and topics that can be change-drivers for success.

Helen Morris

Editor,
Tissue World magazine

Many top speakers will be passing on their knowledge.

A variety of side-events and entertainment, including the Gala Dinner and a Happy Hour Reception, will provide top class relaxation. The Tissue World TV-corner will also feature live-interviews broadcasted over the entire showfloor.

For more details on Tissue World Milan, visit www.tissueworld.com/milan/ or email info@tissueworld.com.

2017 ... bring it on

TWM would like to wish everyone across our vibrant industry the very best for the New Year.

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In Tissue World all measures are metric and all dollars ($) are US dollars, unless otherwise stated.

Eurozone's 'saturated' market consumption has risen well above trend ... thanks to oil. But could it yet go the other way?

Tissue usage increased 3.6% after a dramatic drop in energy prices in the winter of 2014-2015, plus an improvement in consumer confidence. TWM asked Numera Analytics to explain how it happened ... and to look ahead.

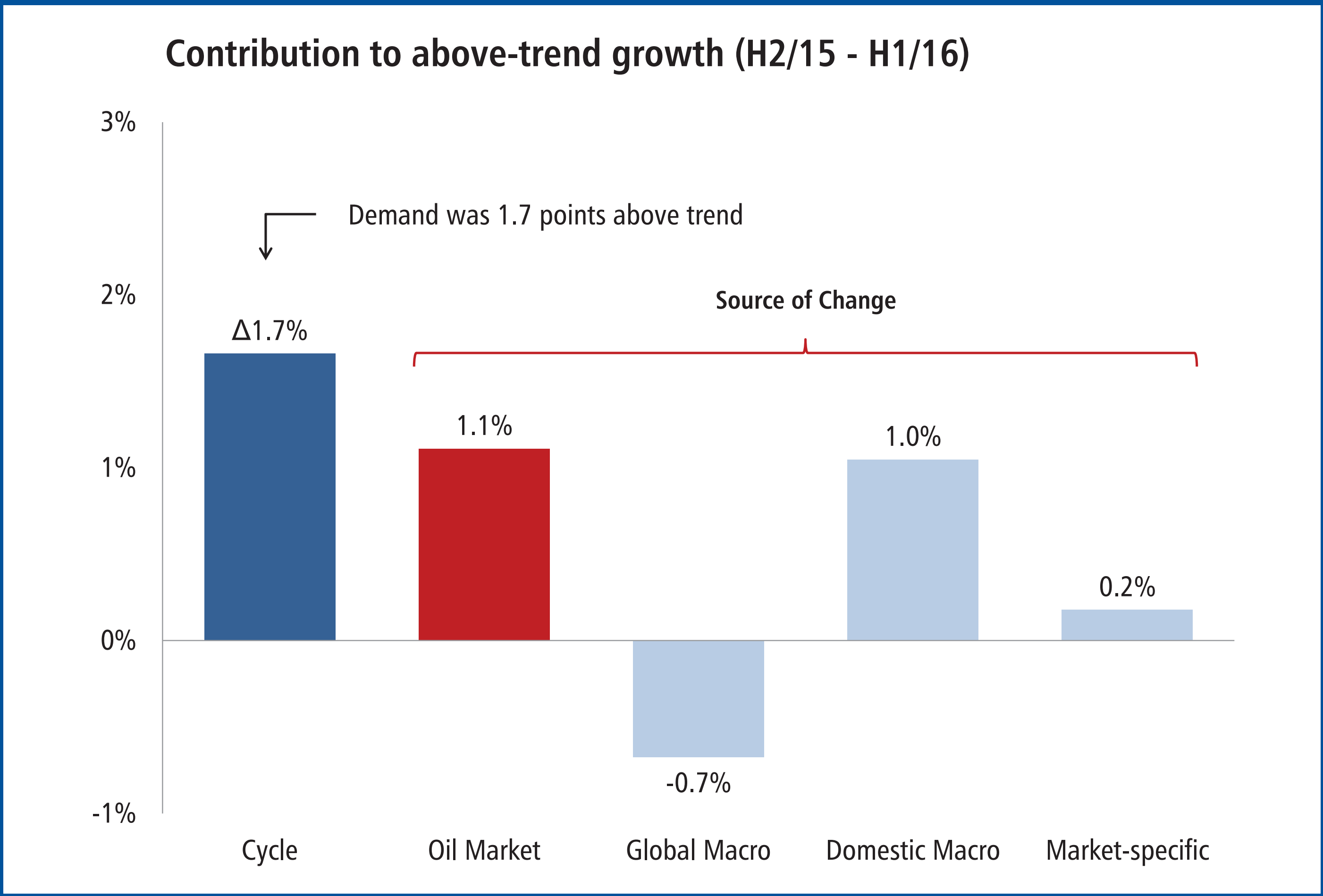
Eurozone tissue consumption accelerated sharply over the last year and lower oil prices have a lot to do with it. Our research indicates that any quick rebound in oil prices could reverse these gains if the increase is driven by a perception that oil supply is to be constrained as opposed to being driven by an improving global economy. This is of particular relevance as the Organisation of the Petroleum Exporting Countries (OPEC) try to agree on oil production curtailments.

Over the last 12 months, the Eurozone's tissue consumption has increased by 3.6%. That is 1.7 points above what could have been expected based on long-term fundamentals.

Based on our calculations, some 65% of the 1.7 points in incremental growth was directly the result of the dramatic drop in energy prices in the winter of 2014-2015. The remainder came from a strengthening in domestic macroeconomic factors such as an improvement in consumer confidence. The only negative shock came from

Joaquin Kritz Lara

Market analyst, Numera Analytics



By market analyst **Joaquin Kritz Lara**

One may wonder why today's increase in tissue consumption can still be driven by oil price declines that happened 20 months ago. The answer is that consumer spending takes time to react to a fall in oil prices, even if the pass-through to gasoline prices is very quick.

slower global economic growth, which the analysis showed reduced tissue demand by 0.7 points.

More than two-thirds of converted tissue products (toilet paper, facial, paper towels) are purchased by households in Europe. The balance is consumed in AfH activities. By increasing the amount of discretionary spending households can afford, the large drop in oil prices has been a significant net positive to consumption of goods in general, including tissue (particularly AfH that is closely linked to employment and discretionary spending on hotels, restaurants, etc).

Yet, one may wonder why today's increase in tissue consumption can still be driven by oil price declines that happened 20 months ago. The answer is that consumer spending takes time to react to a fall in oil prices, even if the pass-through to gasoline prices is very quick.

In fact, the peak response of tissue consumption comes two years after the oil price shock, implying that it will continue to see the benefits through the end of 2016.

While our research demonstrates that oil price shocks have a significant effect on the Eurozone's tissue consumption, the magnitude and direction of the response depends crucially on the nature of the "shock", economists slang for unexpected change.

If global energy prices decline as a result of factors specific to the oil market (i.e. a shift in oil market sentiment), demand for goods and services in the Eurozone strengthens, thereby increasing tissue consumption.

Conversely, if energy prices fall due to a weaker global economy, the purchasing power gain does not compensate for the detrimental effect of weak external demand on private spending. Real consumption falls, reducing demand for all goods and services, including tissue products.

Importantly, we find that Eurozone tissue demand falls by a similar magnitude when oil prices rise rather than fall. This implies that any spike in oil prices could reverse these gains in the future, unless the price increase is driven by a stronger global economy.

A successful attempt to curb oil production by OPEC countries would come as a surprise to the market, given the stated intentions of countries such as Iran, Libya and Nigeria to increase their oil exports.

Looking further out, conflicting forces are at play. The dramatic decline in capital spending on oil exploration and production over the past two years (the number of active drilling rigs operating globally has dropped nearly 60%) would argue in favour of an eventual oil price increase.

At the same time, however, the standardisation of oil drilling components and other cost-cutting measures are driving down the cost of drilling, leading to additional oil supply to the market.

What seems clear is that the next oil shock is likely to come from a shift in market sentiment rather than from a sudden improvement in the global economy. Hence, any rebound in oil prices would have a negative effect on tissue consumption.

Oil price shocks and economic activity: implications for tissue consumption in the Eurozone

Tissue consumption in the Eurozone has grown 3.6% over the past 12 months, compared to a 1.8% increase in real spending on all goods and services. Isolating the cyclical component of tissue demand, we find it grew 1.7% above trend during this period, the strongest increase in over a decade.

We recently published a research paper where we explored the factors behind this improvement. Because Europe's economic recovery occurred in conjunction with a sharp decline in global energy prices, we placed specific attention on the role of oil price changes in generating cyclical fluctuations in tissue demand.

Our research shows oil market shocks have played an important role in lifting tissue consumption in the recent past. More precisely, we find that 1.1% of the 1.7% cyclical increase has been triggered by shocks originating in the global oil market.

Because the demand response to global oil shocks is fairly persistent, large price declines in late 2014 and early 2015 continue to influence tissue consumption today. However, while oil demand shocks can have a lasting effect on tissue purchases, their support eventually dies out.

Considering that global energy prices have stabilised in recent months, their contribution will dissipate as the year progresses. Over the next few years, we expect job creation to take the relay in supporting tissue consumption. Broad-based employment growth, combined with modestly rising wages, will drive tissue consumption in Western Europe up 1.2% per year between 2016 and 2020.

Our research shows oil market shocks have played an important role in lifting tissue consumption in the recent past. More precisely, we find that 1.1% of the 1.7% cyclical increase has been triggered by shocks originating in the global oil market.

Above: *Von Drehle is the first tissue maker in the USA to produce tissue with Valmet's Advantage NTT technology*

AMERICA

Von Drehle starts-up USA's first NTT line

Von Drehle Corporation has successfully started up its First Advantage NTT tissue production line at its Natchez-based mill.
It is the first tissue maker in the USA to produce tissue with Valmet's Advantage NTT technology.
The line has a width of 2.6m, and a speed of 2,000m/min in plain mode and 1,800 m/min in textured mode.
The scope of delivery comprised a complete tissue production line including an Advantage NTT 100HS tissue machine.
It is equipped with an OptiFlo headbox and a cast alloy Yankee cylinder and features the Advantage tissue technology including an AirCap hood and a SoftReel L reel.
Von Drehle Corporation was established in 1974 and is based in Hickory North Carolina, USA.
It currently operates tissue mills in Cordova, Maiden, Memphis and Las Vegas, producing towel, tissue and dispenser products for the AfH market in North America.

ST Tissue invests in "widest Steel Yankee" ever manufactured

ST Tissue has invested in "the widest Steel Yankee ever to be manufactured", according to supplier Toscotec.
The Franklin, Virginia-based mill will convert its F-5 machine to produce bathroom tissue and kitchen towel; Toscotec will rebuild the dry-end section and redesign the machine to convert it to dry crepe tissue.
Its current paper machine configuration consists of a forming section, nip-press section, dryers section and Reel drum and will be converted to dry crepe tissue machine keeping the existing fourdrinier.
The nip-press section will be redesigned to a felt run arrangement that includes new Toscotec dry end equipment.
Scope of supply includes TT SuctionPressRoll-SPR1045, an under machine broke pulper TT MachineBrokePulper-MBP75, and a TT SYD-12FT x 257" face width (6,530mm), which Toscotec said is the widest Steel Yankee Dryer ever manufactured.
The conversion is part of a series of investments that ST tissue is implementing in response to customer demand.
Founded in 2007, ST Paper & ST Tissue operate in Oconto Falls, WI and Isle of Wight, VA.

Bedford Paper invests in retail and AfH production capacity

Bedford Paper has invested in a tissue converting and packaging line for its facility in De Pere, Wisconsin.
Supplied by PCMC, start-up is expected in 2017 and will increase the company's production of retail and AfH small bath tissue and towels.
The line will feature PCMC's Forte Ultra high-speed rewinder and XF wrapper, as well as the Omnia and MultiPacker.
Bedford Paper is located in De Pere, Wisconsin, and it manufactures tissue paper products for the AfH and At-Home markets.
Its product offering includes single roll bath products, household towel, jumbo bath, hardwound towel and centerpull towel.

Sofidel America to boost capacity with NTT purchases

Italian tissue giant Sofidel is to start-up two Valmet-supplied Advantage NTT 200 machines at its site in Circleville, Ohio.
Each line will have a width of 5.5m, a speed of 2,000m/min and a production capacity of 70,00tpy.
Start-up for the first line is expected by the first quarter of 2018 and the second within the third quarter of 2018.
The site is currently under construction and once up and running the two lines will produce conventional tissue and textured paper.
Chief executive Luigi Lazzareschi said: "With the implementation of the two new Valmet NTT machines, we will increase our production capacity in the United States significantly.
"This is a necessary and vital step in our growth strategy. This decision is also consistent with Sofidel's unwavering focus on the most innovative and high-performance technologies."

Tissue World Milan set to be world's largest tissue event

Italy is gearing up to host the world's largest gathering of tissue professionals for the first time as the industry prepares for Tissue World Milan held during 10-12 April 2017.
With an exhibition floor space full of the world's leading companies as well as top-level speakers and vital conference topics, the event looks set to break records.
As early as December 2016, 90% of the floor space was filled with 185 leading companies from 30 countries and many companies are joining the trade show for the first time.

Conference: Change is the only constant, but where is the tipping point?

Alongside the trade show, Tissue World Milan will feature a three-day conference: *Change is the only constant, but where is the tipping point?*
The Senior Management Symposium (SMS) will take place on 10 April and will examine crucial issues and topics that can be change-drivers for success in the tissue industry.
Many tissue companies are today at an important crossroads or tipping point where they must accurately assess potential changes.
This may well determine if they will drive down the road into a commodity trap of low returns or, instead, move ahead on a different forward-thinking path based on new ideas for profitably growing their business.
The Tissue World 2017 SMS offers you the perfect opportunity to examine relevant issues and topics that can be change-drivers for success.
Whether you are a senior executive, a mid-level manager, a tissue buyer, or a machine operator, the spectrum of topics covered at the SMS can provide you with insight and knowledge to boost your tissue business.
New ideas gained at the SMS, if systematically integrated with your current strategies, can support you in embracing progressive change for successful profit growth.
The preliminary agenda includes talks from: Andrea Boltho, University of Oxford, UK; Kersti Strandqvist, SCA, Sweden; Svetlana Uduslivaia, Euromonitor, USA; Patrick Boateng, Major Supermarket, USA, and Wes McConnell, Frameworxs, USA; Esko Uutela, RISI, Germany; Fernanda Accorsi, FA-RETAIL – Content & Solution, Spain; Scott Griffin, Central National Gottesmam, USA
Other components of the conference include the hands-on Yankee Dryer Operations Workshop and retail presentations.
Technical sessions will kick off on 11 April and continue over 12 April, covering recent technical case studies and advancements, the impact of Industry 4.0 in tissue manufacturing, strength properties and energy savings and product novelties.
Preliminary speakers at the time of going to print include:
Ian Padley, BTG, UK; Clemens Stortelder, Albany International, Netherlands; Erwin Walcher, ANDRITZ, Austria; Larry Bonday, Nalco, USA and Gary Furman, Nalco, USA; Benoît Fécamp, Turbomach, Switzerland; speaker tba Valmet, Sweden; Wes McConnell, Frameworxs Analytics, USA; Giovacchino Giurlani, Futura, Italy; Martina Stefanon, TMC, Italy; Stefano Fornasini, ELETRRIC80, Italy; Mattias Drotz, Innventia, Sweden; Tuomo Niemi, METSÄ FIBRE , Finland; Mark Lewis, president, Sustainable Fibre Technologies, USA; Eugenio Cavallini, Ecol Studio, Italy; Dr. Vladimir Grigoriev, KEMIRA, Germany; Angela Knight, SOLENIS, UK; Mark S. Christopher, Buckman, Belgium; Benjamin H. Drummond, Spraying Systems, Canada; Adriano Lazzini, PMPower, Italy; Magnus Bengtsson, Duni, Sweden & Bernhard Kohl, Voith Paper, Germany; Günter Offenbacher, ANDRITZ, Germany; Stefano Marenco, Toscotec, Italy; Rony Michelini, Recard and Claudio Bianucci, , Papergroup, Italy; Glen A. Harvey, Xerium, USA; Bruno Celestino Fabiano, Engefaz Group, Brazil; Enrico Ruglioni, MTorres, Spain and Joe Gotshall, MTorres, USA; John Cork, Ibis International, USA; Andrea Friedrich, Isra Parsytech, Germany; Guido Finoccki, Universal Tissue Technology, Italy; Stefan Kavalos, STAX Technologies, Serbia; Chad Martin, AstenJohnson, USA; Frank Cunnane, Cristini, USA; Jukka Lehto, Runtech Systems, Finland.

First Quality expands manufacturing capacity with PM investments

First Quality Tissue is to focus its long term growth plans on the ultra-premium towel and tissue sectors after it announced plans to invest in two new state-of-the-art tissue machines.
The lines will be installed at the company's South Carolina and Pennsylvania mills: the South Carolina facility is expected to be up and running in the second half of 2018 while the Pennsylvania facility is expected to begin production in the first half of 2019.
In May 2016, the company also launched its fifth PM, located at the Anderson, South Carolina facility.
This new investment brings First Quality's total number of tissue machines to seven and is aimed at customers' growing demands for ultra-premium and innovative products.

Above: *Sofidel chief executive Luigi Lazzareschi addresses the crowd at the Suppliers' Sustainability Award ceremony*

GLOBAL

Winners of Sofidel's Suppliers' Sustainability Award announced

Italian tissue company Sofidel has announced the winners of the first edition of its Suppliers' Sustainability Award.
The award was created to encourage and spread best practice and improvement activity currently being carried out by the tissue mill's suppliers in the area of environmental and social sustainability.
More than 300 of the group's global suppliers took part in the initiative and were assessed according to the "TenP" tool, which is built around the Ten Principles of the UN Global Compact.
Sofidel said the tool follows the most relevant and up-to-date standards and conventions on sustainability and takes into account human rights, labour conditions, environmental protection and the fight against corruption.
Its aim is to identify common challenges and solutions for improving the sustainability within the supply chain.
The awards ceremony was held in Lucca on 24 November. Companies recognised by Sofidel for their commitment towards sustainability are:

Best Supplier:

- Pulp Producers Category: **SCA Graphic Sundsvall**
- Procurement & Purchasing Category: **Henkel**
- Logistic Services Category: **Chep Italia**
- Marketing & Sales Category: **Vizeum Deutschland**

Best Improver:

- Pulp Producers Category: **Arauco**
- Procurement & Purchasing Category: **TMC**
- Logistic Services Category: **JC Trans (UK)**
- Marketing & Sales Category: **Vizeum Deutschland**

Best Sustainable Project:

- Large Companies Category: **Metsa Fibre**
- Medium Companies Category: **Imball Center**
- Small Companies Category: **Kinect Energy.**

"We experienced a more challenging economic and competitive environment in the third quarter. Nonetheless, our market share positions are broadly healthy. We achieved strong cost savings, improved margins and increased cash flow in the quarter."

Thomas J. Falk

K-C reports a "more challenging economic and competitive environment" in 3Q results

Kimberly-Clark has reported a net sales decrease y-o-y of 3% in its 3Q 2016 results, as chairman and chief executive Thomas J. Falk describes the company's market share positions as "broadly healthy".
For the three months ended 30 September 2016, the company reported net sales of $4.6bn.
This was a result of changes in foreign currency exchange rates that reduced sales by more than 2%.
Third quarter operating profit was $836m in 2016 and $779m in 2015, an increase of 7.3%.
Full-year 2016 organic sales growth is expected to be 2% compared to the company's prior expectation for growth at the low end of the 3 – 5% range.
Falk said: "We experienced a more challenging economic and competitive

environment in the third quarter. Nonetheless, our market share positions are broadly healthy. We achieved strong cost savings, improved margins and increased cash flow in the quarter.

"We also allocated capital in shareholder-friendly ways. Our focus remains on continuing to compete effectively in the near-term as we execute our Global Business Plan strategies for long-term success."

The company's consumer tissue segment reported third quarter sales of $1.5bn, a decreased of 4%.

The company said currency rates were unfavourable by 2% and volumes were off 2%.

Third quarter operating profit of $267m increased 3%. The company said the comparison benefited from cost savings and input cost deflation, partially offset by unfavourable currencies and lower organic sales.

Sales in North America decreased 4%; volumes were down 3% and product mix was an unfavourable 1%.

Sales in developing and emerging markets decreased 4%, including a four point negative impact from currency rates.

Net selling prices rose 3%, offset by lower volumes.

Sales in developed markets outside North America fell 4%, with currency rates unfavourable by 3%.

Net selling prices were down 2% while volumes were up 1%.

In October 2014, K-C initiated a restructuring programme in order to improve organisation efficiency – the restructuring is expected to be completed by the end of 2016, with total costs anticipated to be toward the high end of the previously communicated range of $130 to $160 million after tax ($190 to $230 million pre-tax).

SCA announces capital structure and dividend policy for hygiene business; doesn't rule out potential corporate acquisition

SCA has decided on capital structure and dividend policy targets for its hygiene business.

The capital structure target for SCA's hygiene business is to have an effective capital structure at the same time that the long-term access to debt financing is ensured.

Cash flow in relation to net debt will take into account the target to maintain a solid investment grade rating.

The company said: "SCA's hygiene business aims to provide long-term stable and rising dividends to its shareholders.

"When cash flow from current operations exceeds what the company can invest in profitable expansion over the long term, and under the condition that the capital structure target is met, the surplus shall be distributed to the shareholders.

"As per 30 September 2016, SCA's net debt, including pension liabilities, amounted to SEK 40,281m, allocated pro forma as follows: SEK 35,281m attributed to the hygiene business and SEK 5,000m to the forest products business."

SCA's current lenders will be given the possibility to switch counterparty to SCA Hygiene AB, the Parent Company of SCA's hygiene business or its subsidiaries.

In a statement the company said: "Due to this SCA informs that the company is currently participating in a process relating to a potential corporate acquisition.

"The process is still in an early phase but no decisions have been made.

"However, any potential acquisition by SCA will be made without prejudice of the capital structure targets."

SCA targets environment with Okay® Compressé launch

SCA's consumer tissue brand Okay® has launched a compressed household towel "Okay® Compressé".

The company said the product performs as well as regular household paper towels but added that it is half the size and therefore better for the environment.

SCA said the product is made using patented High Density Fibres technology "to compress the individual sheets, making Okay® Compressé less bulky than regular household towel.

"Okay® Compressé requires 30% less packaging which means it's easier to carry and store, yet it is just as good as regular Okay® towels.

"It's estimated that 36% fewer trucks will be needed to transport the product, resulting in less CO2 emissions."

Okay® Compressé has the same number of sheets as a regular roll but is only half the size.

RUSSIA

Arkhangelsk pitches for state aid for domestic tissue investments in Vorsino

The Russian pulp and paper giant Arkhangelsk Pulp and Paper Mill (APPM), which is implementing a large tissue mill investment in Vorsino, in the Kaluga region, is soliciting government aid for domestic tissue industry players.

According to APPM, by 2030 Russian demand for tissue paper will exceed 1.4m tonnes, while the domestic capacity is expected to grow to 990,00tpy meaning a 340,000tpy gap.

APPM is currently implementing an investment that includes two tissue PMs with a total capacity of 140,000tpy to be installed in two steps from 2018-2021.

There is an option to raise that capacity to 210,000tpy, which would go some way towards meeting the growing domestic demand, APPM's government relations manager Natalya Pinyaguina said.

According to Pinyaguina, the Ministry of Trade has initiated a working group, of which APPM is a part, aimed at laying out state aid measures to help grow domestic tissue production.

Pinyaguina said that APPM has put forward several key initiatives, including guaranteed government orders for domestic tissue products, subsidies to cover interest payments on loans and tax relief tools as well as state guarantees for the provision of bank loans.

APPM's Vorsino mill will use virgin pulp as the main raw material for its production.

Alongside the PMs, the facility will house several converting lines for production of toilet paper, tissue and napkins. The project will cost some Euro 120 million.

At a later stage of the investment, the mill will also be fitted with equipment to make tissue products for the consumer as well as the hotel and food service market segments.

News from www.risiinfo.com

South Africa's Twinsaver Group has boosted its capacity after it invested R500m in a new Toscotec AHEAD-2.0S tissue production line. Based at its Kliprivier site in Gauteng, the line will be started-up in the last quarter of 2017.

SOUTH AFRICA

Above: *The Twinsaver Group's ground-breaking ceremony in Kliprivier, Gauteng*

Twinsaver Group to become "largest tissue manufacturer" in Sub-Saharan Africa

South Africa's Twinsaver Group has boosted its capacity after it invested R500m in a new Toscotec AHEAD-2.0S tissue production line.
Based at its Kliprivier site in Gauteng, the line will be started-up in the last quarter of 2017.
The turn-key delivery for the new TM5 will include a stock preparation system for virgin pulp, an AHEAD-2.0S tissue machine, tissue machine and plant auxiliaries, electrification and control systems.
It will have a width of 2.75m and will be designed for 2,000mpm speed, producing high-quality super-soft toilet tissue.
The greenfield project will be focused on energy savings and low emission concepts with a great attention to the environment.
Twinsaver Group produces branded toilet tissue, facial tissues, roller towels, house and leisure and AfH products.

JAPAN

Daio Paper firms up plans to start tissue production at Kawanoe mill

Daio Paper has announced that its board of directors has green-lit a plan to restart operations at its inactive Kawanoe mill in Ehime prefecture.
The site, which is near Daio's huge Mishima mill, will benefit from the latter's pulp production and energy facilities as it produces a projected 4,500 tonnes per month of household paper products.
Output will include tissues, toilet paper, and kitchen paper.
The project is projected to cost about ¥24 billion, up from an original estimate of ¥21 billion.
It now includes a processing plant in Gyoda, Saitama prefecture, which falls into the greater Tokyo area, facilitating distribution.
The project is expected to be operational as of October 2018.

News from www.risiinfo.com

Daio Paper has announced that its board of directors has green-lit a plan to restart operations at its inactive Kawanoe mill in Ehime prefecture.

Japan's Daio loses appeal in NPI tissue patent infringement case

The latest ruling in a legal battle that has been in the Japanese courts since 2012 between Nippon Paper Industries (NPI) and Daio Paper was made in NPI's favour.
Daio was accused of infringing patents pertaining to tissue paper production held by NPI subsidiary Nippon Crecia. It was ruled guilty in 2012.
It appealed the ruling, but the repeal was rejected late last month by Japan's Intellectual Property High Court.
Daio announced that it is reserving its right to a further appeal, so a settlement is not yet under public discussion.
But according to NPI, there has been a confirmation that Daio will not appeal the case further.

News from www.risiinfo.com

FRANCE

K-C invests €15m in tissue converting line at Villey-Saint-Etienne plant

Kimberly-Clark has invested approximately €15m in a hand towel tissue converting line at its Villey-Saint-Etienne facility in France.
After installation at the start of the year, the new line was in a ramp-up phase until September.
The converting line is now running at its full capacity of approximately 15,000tpy.
Plant managing director Frédéric Petit said there were two reasons for the investment: the need for a production capacity increase in order to face growing demand for rolled hand towels combined with product innovation and the launch of the firm's new product Scott Max.
"The business and mill's dynamism allowed us to create 28 permanent jobs at the site in the last 12 months," he said.
The facility also houses a 80,000tpy tissue machine and employs some 250 people.
This year, the company plans to convert more than 70,000 tonnes of paper, compared to some 64,000 tonnes last year.

News from www.risiinfo.com

Kimberly-Clark has invested approximately €15m in a hand towel tissue converting line at its Villey-Saint-Etienne facility in France. After installation at the start of the year, the new line was in a ramp-up phase until September.

Based in Putian city, Fujian province, Taison Group has been expanding rapidly through various mergers and acquisitions and also capacity growth projects. Prior to the announcement of the greenfield project in Jiangxi, its investments in the tissue sector had been largely concentrated in the southwestern part of China.

CHINA

Taison Group paving the way for tissue expansions in Jiangxi

Taison Group is planning to build a huge greenfield tissue and hygiene product mill in Jiujiang, Jiangxi province.
The proposed project is subject to environmental impact assessments (EIAs).
An initial EIA document was published by local environmental authorities on 18 October, open to advice from the public for the following ten working days.
According to the file, the planned mill will run 480,000tpy of tissue paper capacity and 180,000tpy of tissue product converting capacity, as well as hygiene product lines capable of making 1.8bn sanitary pads and diapers per year.
The RMB 9.81bn project will be implemented in two phases, but the EIA report did not disclose a timeline on them.
However, local media reported that the first phase will see 240,000tpy of tissue paper capacity and 120,000tpy of tissue product converting capacity coming on stream by the end of 2017.
Based in Putian city, Fujian province, Taison Group has been expanding rapidly through various mergers and acquisitions and also capacity growth projects.
Prior to the announcement of the greenfield project in Jiangxi, its investments in the tissue sector had been largely concentrated in the southwestern part of China.
Its subsidiary Shanghai Taison Pulp acquired Guizhou Chitianhua in late 2014.
The facility operates a 250,000tpy bamboo pulp line in Chishui city, Guizhou province and has ordered a pair of 60,000tpy tissue PMs from Andritz.
The first unit was originally planned to start up by the end of this year, followed by the second in 2017.
But a source close to the project told PPI Asia that the installation of the first machine is expected to begin in late 2016, which means its startup will have to be later than previously scheduled.
In July 2015, Shanghai Taison Pulp took over Chongqing Well Mind Paper, which has a total tissue capacity of around 55,000tpy at a mill in Chongqing municipality.
Taison Group has also been expanding in the recycled containerboard sector.
It became the main shareholder of Shanghai-listed Anhui Shanying in 2013.
The latter collected RMB 2 billion in July via a private placement to fund three new recycled board machines with a combined capacity of 1.2m tpy, to be erected at a mill in Jiaxing city, Zhejiang province.
It also signed an agreement with the local authorities in Huanggang city, Hubei province in 2015 to build a 2m tpy board mill there.
Anhui Shanying has not hammered out a detailed timeline for the two projects, according to a contact from the company.

News from www.risiinfo.com

Shandong Tranlin condemns report revealing legal problems and pledge of shares in subsidiary

Shandong Tranlin has condemned a media report on its involvement in multiple lawsuits and its pledge of the entirety of its equity in a subsidiary, Chiping Tranlin Paper, to a distressed asset management company in China.
The pulp and paper producer reacted after Shandong Business Daily, a Chinese newspaper, revealed that since the start of this year the company and its subsidiaries have been sued by different plaintiffs in at least ten lawsuits for overdue payments or disputed debt.
The newspaper posted two court rulings out of the ten cases.
In the first ruling, issued in July, the judgement ordered that RMB 12.5m or property of equal value belonging to Shandong Tranlin and its subsidiary in Xiajin County, Shandong province, be frozen.
This was consequent to Xiajin Economic Development and Investment Centre bringing action against Shandong Tranlin on debt disputes.
The second ruling, which was made in September, saw the court decide that Shandong Tranlin Straw Utilization Company, another subsidiary, needed to pay a debt of RMB 1.48 million to Linde (China) Forklift Truck for 11 forklifts supplied in the final quarter of 2015.
Aside from the court cases, the newspaper also disclosed that in late August Shandong Tranlin pledged 100% of its shares in Chiping Tranlin Paper, an 84,000tpy printing and writing paper mill in Shandong province's Liaocheng city, to China Cinda Asset Management, a state-owned financial firm known for managing bad loans.
In response to the Shandong Business Daily revelations, Shandong Tranlin admitted to the lawsuits and the equity pledge agreement, but denounced the tenor of the news pieces as defamatory to its reputation.
It claimed being involved in legal cases is normal for a large-scale enterprise of its size.
The company also explained that the equity pledge was made as security for a loan from China Cinda Asset Management, and should also be considered as part of normal business operations.
The amount of the loan was not revealed.
Shandong Tranlin operates a 400,000tpy straw pulp line at its flagship mill in Gaotang, Shandong, and runs several mills in the same province with a combined capacity of around 680,000tpy of printing and writing paper and 100,000tpy of tissue.
In early 2014, it secured a loan of RMB7.9bn based on a portfolio of 34 trademarks and 110 patents from a group of Chinese banks, led by national policy bank China Development Bank.
In June of the same year, the company formed a US unit with a plan to invest $2bn to build a straw pulp, tissue and

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fertiliser mill in Chesterfield County, Virginia, USA.
The US subsidiary recently renamed itself Vastly and hired the Jacobs Engineering Group to handle environmental permit applications and the preliminary design for the project.
Vastly did not respond to a request for comment on its parent company's situation.

News from www.risiinfo.com

Henan Yinge's principal shareholder listed for sale

Henan Yinge Industrial Investment has revealed that its principal shareholder has been put up for sale for RMB 3.08 billion ($457 million).
Luohe Yinge Industrial Group holds a 47.35% stake in the Shanghai-listed pulp & paper (P&P) producer.
It is itself a wholly owned subsidiary of the state-owned Henan Energy and Chemical Industry Group (HNEC).
After approval from the state-owned assets administrator in Henan province, the offer was announced last month after first being publicly suggested in May.
According to the terms offered by HNEC, the qualified purchaser must be a business entity that has been registered in China for at least three years and must not be associated with HNEC or any of its subsidiaries.
So far no potential buyer has emerged.
Henan Yinge currently has around 3,000 staff and operates several sites in Henan and Sichuan provinces with a combined capacity of around 700,000tpy of various P&P grades, mainly tissue and recycled containerboard.
That includes a swing bamboo pulp line capable of producing 50,000tpy of dissolving pulp.
The once profitable P&P producer was taken over by HNEC in 2011.
It has suffered huge losses since then as a result of intense competition and the weak economy.
The company escaped a delisting crisis in 2015 thanks to RMB 195 million in asset sales and RMB 212 million in government subsidies, which helped it move out of the red.

News from www.risiinfo.com

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C&S plans tissue expansion in Hebei; small mills in Mancheng forced to stop to combat smog

C&S Paper is to add 75,000tpy of new tissue paper capacity at its mill in Tangshan city, Hebei province, to feed increasing demand in northern and northeastern China.
The board of directors of the Shenzhen-listed company approved the expansion plan in November.
The project will involve a total investment of RMB 408.81 million and is expected to be finished in three years. A company spokesperson said the scheme is at an early planning stage and declined to disclose more detail.
C&S Paper operates six mills with a combined capacity of 466,000tpy, making it the fourth largest tissue producer in China.
The Tangshan plant is its only production site in North China; it currently houses just one tissue machine. The 25,000tpy unit, supplied by Toscotec, was commissioned in 2012.
Back in 2010 when the company made its initial public offering on the Shenzhen stock exchange, it originally planned to install three tissue units with a total capacity of 50,000tpy at Tangshan. A year later the scheme was revised to one machine, due to lukewarm demand in the north at that time.
Tissue mills offline in Mancheng: Hebei has long suffered severe air pollution as a result of the concentration of highly polluting industries, such as steel production.
The province is also considered as a key source of pollutants that cause smog in the neighboring capital city Beijing.
Local authorities have taken a series of tough measures since the beginning of this month to reduce emissions.
The government of Mancheng county of Baoding city, about 300 km west of Tangshan, has mandated the stoppage of all coal boilers with a capacity of less than 10 tonnes/hour since November 11, and is replacing them with a gas-fueled central power supply system.
The county is home to numerous small tissue mills with a total capacity of around 1.2 million tpy. Many were consequently forced to suspend or curb production and it is unclear when they will be able to resume normal operations.

News from www.risiinfo.com

BRAZIL

Carta Fabril to install "world's largest Steel Yankee" for tissue

Carta Fabril is to boost its capacity after it signed for a PrimeLineST W22 tissue machine with Steel Yankee and steam-heated hood.
The line is scheduled to start up at the company's Anápolis mill during January 2019.
According to supplier Andritz, with a diameter of 22ft the machine is the largest Steel Yankee for tissue worldwide.
The supplier added that the steam-heated hood enables "efficient drying with substantial energy savings and safe operation".
It has a design speed of 2,100m/min and a width of 5.5m and will use 100% renewable energy generated from biomass and converted into steam.
Carta Fabril ranks among the key players in the Brazilian tissue business and covers the complete product range of tissue papers.

UNITED ARAB EMIRATES

Ittihad to invest in new UWF PM; mulls new tissue PM

Abu Dhabi's Ittihad International Investments will start construction of a 325,000tpy uncoated woodfree (UWF) paper machine at its Ittihad Paper Mill in November.
The 7.5m wide machine – the first one to be installed at the site – will be up and running towards the end of 2018.
"The area has capacity for two machines

but we are starting with one," a source at the company revealed, adding that Ittihad is in the final stages of selecting suppliers.
The firm is also mulling a further investment at its Crown Paper Mill in Abu Dhabi. The project under consideration would add a third tissue PM with a width of 5.6m and capacity of 65,000tpy.
The Crown mill currently operates two PMs with a combined capacity of 30,000tpy. The company said it is already in talks with two machinery suppliers for the construction of the third production line.
Ittihad International Investment, the parent firm of both mills, manages a portfolio of manufacturing companies active in the cement, chemicals and building materials as well as paper sectors.

News from www.risiinfo.com

CANADA

Irving boosts capacity with TAD investment

Irving Consumer Products has invested in a Thru-Air Dried tissue making machine from Valmet.
Delivery is expected in 2018 and once up and running the line will increase its household paper products capacity.
President of the Dieppe-based company Robert K. Irving said: "The purchase of a new TAD machine will help Irving Consumer Products continue to grow and deliver quality household paper products to our customers."
He added that consumer demand has led to growth in the quantity and variety of TAD household paper products such as bathroom tissue and household towel.

"The purchase of a new TAD machine will help Irving Consumer Products continue to grow and deliver quality household paper products to our customers."

Robert K. Irving

The Advantage ThruAir Drying machine will deliver ultra premium household paper products for Irving customers, producing very high softness and bulk for bath products and ultra premium performance strength and absorbency for towel products.

CZECH REPUBLIC

Timeline for BOR Biotechnology tissue mill project pushed back

The plans of Czech company BOR Biotechnology to build a new tissue mill in the town of Kozomín, north of Prague, are moving forward but the timeline for the project has been extended as the company is still awaiting a green light from some authorities.
The firm said in February this year that it would build a new Euro 20m tissue mill with a capacity of 8tpy.
At the time, they said construction would begin this autumn and that production would launch in the second half of 2017.
Now, however, BOR Biotechnology said the permitting process has not been completed. While environmental approval has been granted, construction permits are still being negotiated.
Given that, a company representative said that construction is now expected to begin by the middle of 2017, and that production should be up and running by 2018.
The firm plans to target the central European tissue market with the new production.
BOR Biotechnology was established in 2008 and is already active in the biomass segment, with a wood chip-powered power plant in Kozomín. According to local press reports, the plant can produce 1,000 MWh of electricity per month and provide power for up to 3,000 households.

News from www.risiinfo.com

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SPAIN

Gomà-Camps to boost capacity by 34,000tpy following investment

Gomà-Camps Group has signed for a new high quality paper machine to be installed at its Gomà-Camps Consumer site in Ejea de los Caballeros.
Supplied by Voith, PM7 has a trim width of 2.8m, a design speed of 2,000m/min and a production capacity of 34,000tpy.
The Group has received all permits for its Euro 30 million investment and construction has already started in a Greenfield area of 12,000m2 next to the company's current converting facilities.
Production start-up is expected at the Gomà-Camps Consumer site in February 2018. After start-up, the Group's total production capacity will exceed 90,000tpy and reinforces its position in the global tissue market.

ICT to double capacity at Spanish mill with new tissue PM

Italy's Industrie Cartarie Tronchetti (ICT) will double the production capacity of its paper mill in El Burgo de Ebro by installing a new 70,000tpy tissue paper machine.
The company has yet to receive all the permits for its €100m investment, but has already obtained the green light from the Aragona autonomous regional government.
"We expect to make a formal announcement at the beginning of 2017," a source at the company said.
According to the contact, it will take roughly 18 months to build up the new machine, so production is expected to start sometime in 2018.
ICT initially unveiled plans to install a new machine at El Burgo de Ebro facility back in 2014.
The company already runs five tissue lines in Italy, one in Spain, three in Poland and one in France.
After the new investment, ICT's total production capacity will amount to over 570,000tpy.

News from www.risiinfo.com

Scandinavia – regional provider of pulp and paper with local T&T business

Bill Burns

Senior consultant, Fisher International

Scandinavia (Sweden, Norway and Denmark) is well known for producing pulp and paper products for both the local market and export. Exports are heavily focused on Western European countries but the reach goes well beyond Europe. Key paper products include Packaging and Printing/Writing grades representing 56% of total pulp and paper capacity. Market Pulp is also a major product at 29% of total capacity and a significant contributor to exports.

Towel and Tissue (T&T), the focus of this article and also a part of the Scandinavian product portfolio, is not heavily involved in the export trade beyond the area. In fact, T&T products represent a mere 2% of the Scandinavian pulp and paper market (Figure 1).

While it is possible for tissue producers to compete all over Europe, we have restricted our market comparison to a handful of Western-European and Baltic-State tissue-making countries in close proximity to Scandinavia (Belgium, Finland, France, Germany, Lithuania, the Netherlands, Poland, and the UK). Production capacity mix in this broader market area is similar to that of Scandinavia except when it comes to T&T and Market Pulp. Printing/Writing and Packaging grades represent 66% of the market while Market Pulp is 15% versus Scandinavia's 29% (Figure 2). T&T is about 6% of the market among the countries collectively, three times that of Scandinavia at 2%.

Area T&T market share heavily favours Germany, France, Poland and the United Kingdom which collectively accounts for 83% of the capacity in line with their sizeable population which is more than ten times that of Scandinavia's 21 million people. In proportion to their market size,

Above: Scandinavian T&T mill locations.

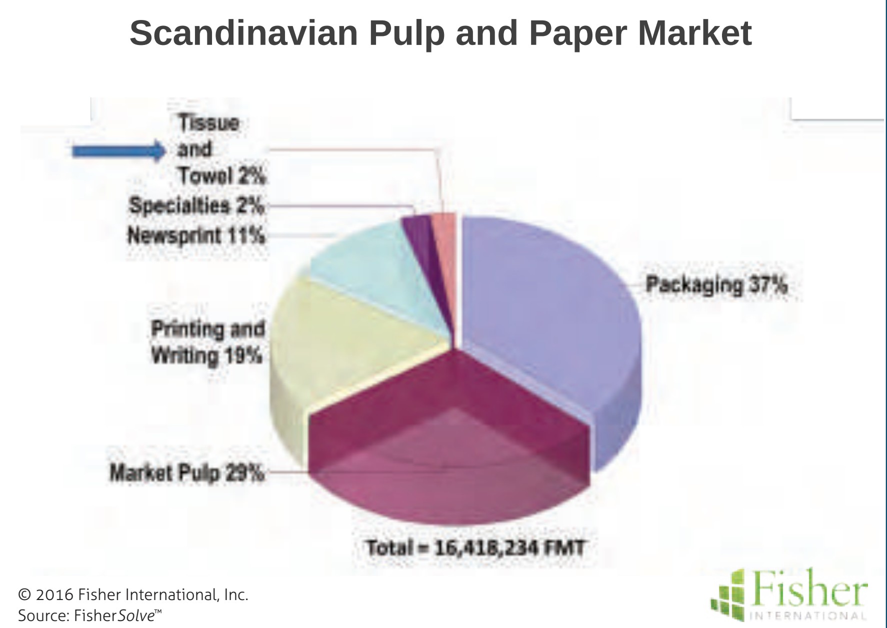


Figure 1: Scandinavian P&P Market

By Fisher International's **Bill Burns**

the three Scandinavian countries account for 7% of the market with Swedish mills owning nearly all of that capacity (Figure 3). Sweden has the highest per capita T&T production rate in the area (Figure 4) which likely speaks to its T&T export market.

Capacity growth in the area has been relatively flat. Scandinavian countries experienced an uptick in capacity during the 2008 to 2009 period (Figure 5). Since then, the growth rate has seen little change and, based on announcements, it appears the trend will continue for the near future.

Only Lithuania and Poland show signs of growth. Lithuania leads with a historical Cumulative Average Growth Rate (CAGR) of 10.8% while Poland is posting appreciable future growth (Figure 6). There are no announced capacity changes for the other countries.

As noted earlier, Scandinavia's T&T business is concentrated almost exclusively in Sweden. Thirteen of the 14 T&T machines in Scandinavia are located in Sweden. Norway accounts for one machine and Denmark has none. Norway's machine is running fully on recycled fibre while Swedish machines average about 60% Kraft and 40% recycled fibre in their furnish (Figure 7).

Fibre mix among the remainder countries in the area varies greatly. Those of the three largest producing countries are similar to Sweden with 50% or greater virgin fibre.

The 14 machines in Scandinavia range in age from mid to late 1900s. Speeds tend to reflect age with the slowest machines being from the 1950s and the faster machines being installed later in the century. All of the machines are in the 2.5 to 3.0 metre class. (Figure 8). Company share of capacity is heavily weighted to Metsä Tissue at 36% and SCA at 27%. Sofidel also has a significant presence of 17% (Figure 9).

Cost competiveness is fairly intense among these European countries. France, Germany and the United Kingdom dominate the capacity and have similar cost positions. They set the median cost benchmark for the area. The Scandinavian producing countries are cost competitive but not to an extent that would command significant market price influence (Figure 10).

Looking inside the numbers, Sweden has a disadvantage in energy and labour costs compared to the lowest-cost major producing country.

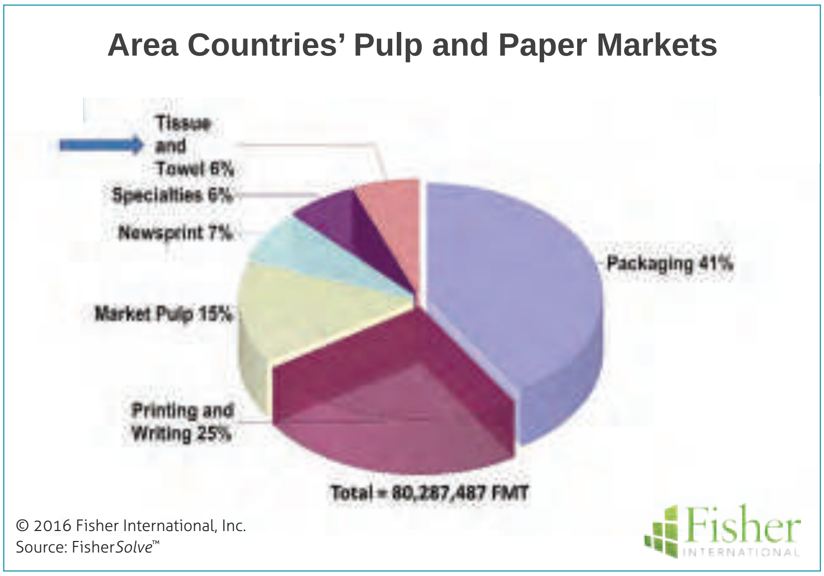


Figure 2: *Area countries' pulp and paper markets*

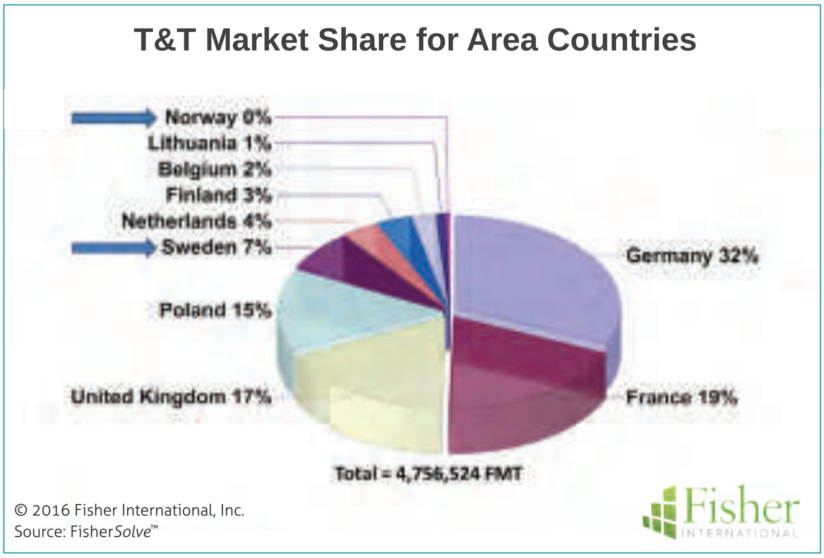


Figure 3: *T&T market share for area countries*

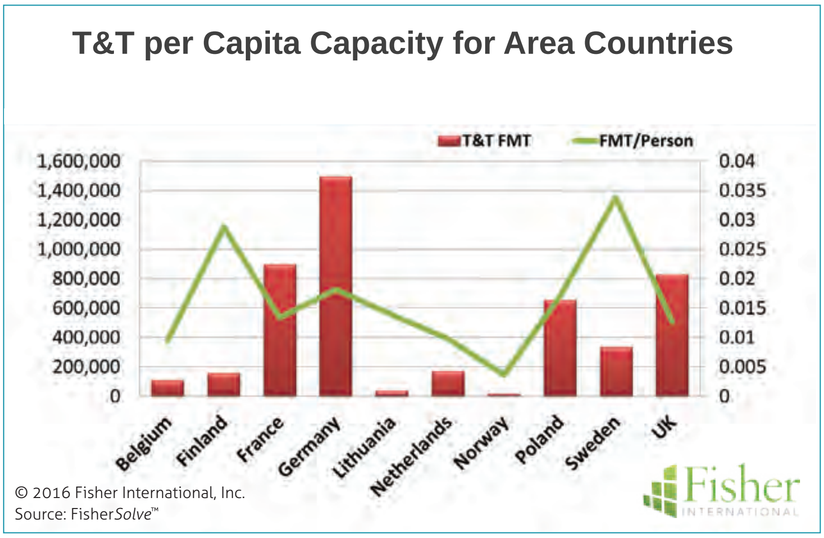


Figure 4: *T&T per capita capacity for area countries*

By Fisher International's **Bill Burns**

Poland on the other hand has a big advantage in labour cost. Sweden is neither advantaged nor disadvantaged compared to the other major producers Germany, France and the UK. Norway has an advantage in fibre and is well positioned with energy but is at a disadvantage in labour compared to all the other major producing countries.

Carbon emissions are often considered, along with cost, as an indicator of potential future capital and operating mitigation costs that could impact overall cost position. Scandinavia in general (and Sweden in particular) has very low emission rates compared to the other countries in the region (Figure 11). Worldwide, Sweden is solidly a first quartile in emissions and presumably has less future capital cost risk because of it (Figure 12).

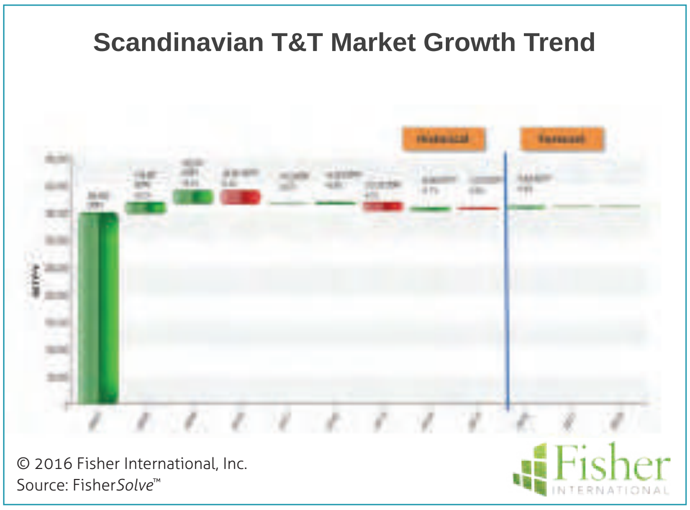


Figure 5: *Scandinavian T&T market growth trend*

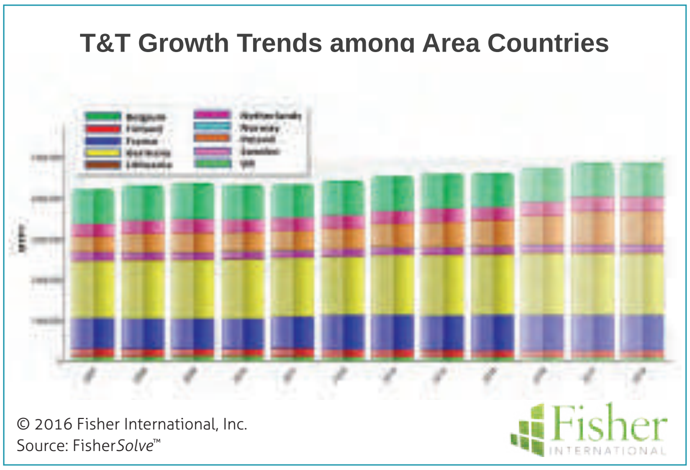


Figure 6: *T&T growth trends among area countries*

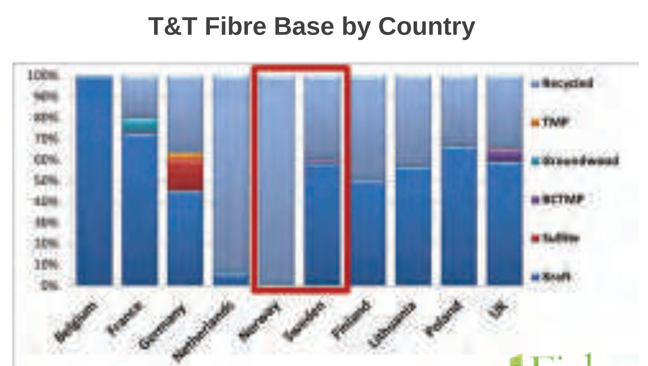
By Fisher International's **Bill Burns**

The source for market data and analysis in this article is Fisher*Solve*™. Data tables behind Figures 1 - 11 can be obtained from Fisher International. Email requests to **info@fisheri.com.**

About Fisher International, Inc.

Fisher International supports the pulp and paper industry with business intelligence and strategy consulting. Fisher International's rich databases, powerful analytics, and expert consultants are indispensable resources to the industry's producers, suppliers, investors, and buyers worldwide.

FisherSolve™ is the pulp and paper industry's premier business intelligence resource. Complete and accurate, FisherSolve is unique in describing the assets and operations of every mill in the world (making 50 TPD or more), modeling the mass-energy balance of each, analysing their production costs, predicting their economic viability, and providing a wealth of information necessary for strategic planning and implementation. FisherSolve is a product of Fisher International, Inc. For more information visit: www.fisheri.com or email info@fisheri.com USA: +1-203-854-5390



Source: Fisher*Solve*™

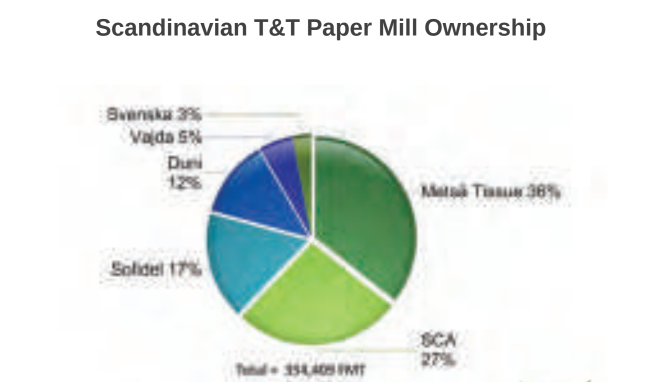
Figure 7: *T&T fibre base by country*

Scandinavian T&T Machines - Key Metrics

PM Year installed, Year	Average of Tech Age, Queried Machines	Average of PM Speed, MPM	Average of PM Trim, Centimeters	Average of TPD/Trim Width, MTPD/cm
1950 - 1959	45.63	780	310	0.15
1960 - 1969	25.85	1,430	263	0.25
1970 - 1979	n/a	n/a	n/a	n/a
1980 - 1989	21.44	1,663	319	0.29
1990 - 2000	18.50	1,481	297	0.26
TOTAL	25.84	1,435	293	0.25

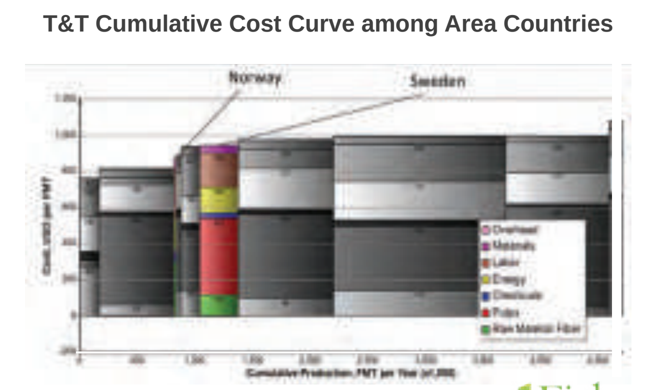
Source: Fisher*Solve*™

Figure 8: *Scandinavian T&T machines - key metrics*



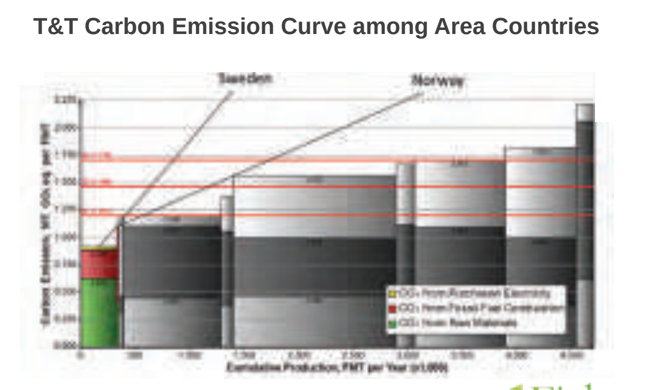
Source: Fisher*Solve*™

Figure 9: *Scandinavian T&T paper mill ownership*



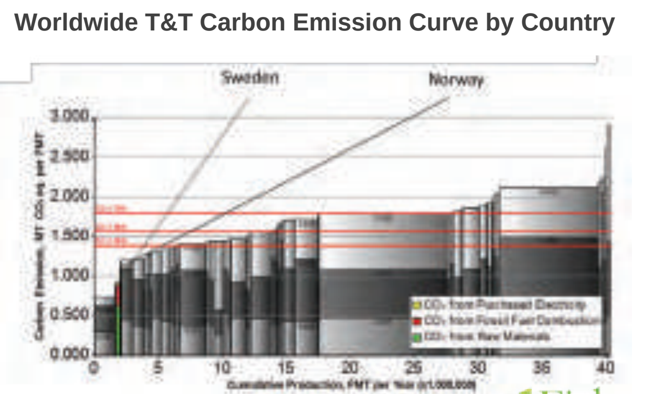
Source: Fisher*Solve*™ Carbon Benchmarking

Figure 10: *Cumulative cost curve among area countries*



Source: Fisher*Solve*™ Carbon Benchmarking

Figure 11: *T&T Carbon emission curve among area countries*



Source: Fisher*Solve*™ Carbon Benchmarking

Figure 12: *Worldwide carbon emission curve by country*

Scandinavia: balancing price, quality and environmental impact in retail consumer tissue*

**Included are Denmark, Finland, Norway, and Sweden*

C E Elvio Andrade

Research manager, Euromonitor International

C E Carl-Filip Clausson

Research analyst, Euromonitor International

With retail per capita consumption ranging between 7kg and 9kg, consumer tissue in Scandinavia has reached maturity and a high level of household penetration. As a result, year-on-year growth rates in retail across markets have seen only modest gains in volume terms over the past several years.

The four markets in the region (Denmark, Finland, Norway and Sweden) share certain similarities in consumer attitudes and purchasing patterns of tissue products, such as price consciousness, value for money and environment. However, opportunities in premiumisation do exist, as attested by new products introduced across Scandinavia featuring scents, designs as well as added health attributes to meet a variety of consumer needs. Hence, manufacturers' and retailers' innovation strategies in the region have been focused on finding the right balance between price, quality and reduced environmental impact.

Balancing price and quality

Like many other developed markets where retail tissue products see a high level of commoditisation, private label plays a significant role in tissue sales in the region, with further share increases recorded in 2015. Denmark and Sweden show the highest level of private label penetration among the Scandinavia countries.

The significant presence of private label attests to the fact that many Scandinavian consumers are price sensitive and are reluctant to pay extra for tissue products, unless fully convinced they are getting extra value for money. That said, however, to remain competitive, retailers in the region ensure that private label options appeal to a variety of consumer groups, including those who seek high-quality tissue. The premiumisation trend in private label is reflected in a range of new products, such as the 2015 launch of ICA Vårt Finaste Toalettpapper (Our Finest Toilet Paper) by the grocery retailer ICA Sverige in Sweden. The new line features 5-ply toilet paper, in contrast to the more typical 3- or 4-ply paper in the country.

While price sensitivity and private label activities present a challenge for the tissue manufacturers seeking to develop the premium segment to support industry revenues, ongoing innovation in value-added products reflects the opportunities in the region. In Finland, for instance, 2015 saw the launch of premium-positioned facial tissues by Metsä Tissue – handkerchiefs with a fresh forest scent under Serla Nenäliina Rentouttava Metsä. These are positioned as helping users to relax thanks to the use of essential oils. Other examples of scented products include the 2016 launch of Lotus Soft Embo Season Scent by SCA, featuring an Asian Spa fragrance in its shell and advertised as being as safe to use as traditional Lotus Soft Embo products as the scent comes from the shell and not the paper itself. New designs, including packaging, are also used to add value to tissue products. In Denmark, for instance, Metsä Tissue launched boxed facial tissue under Lambi Ultra Soft in a range of different pack colours to appeal to design-conscious consumers who want boxed tissues to match their interior designs and colour schemes, particularly those with limited living and storage space who have to display such packs in their homes.

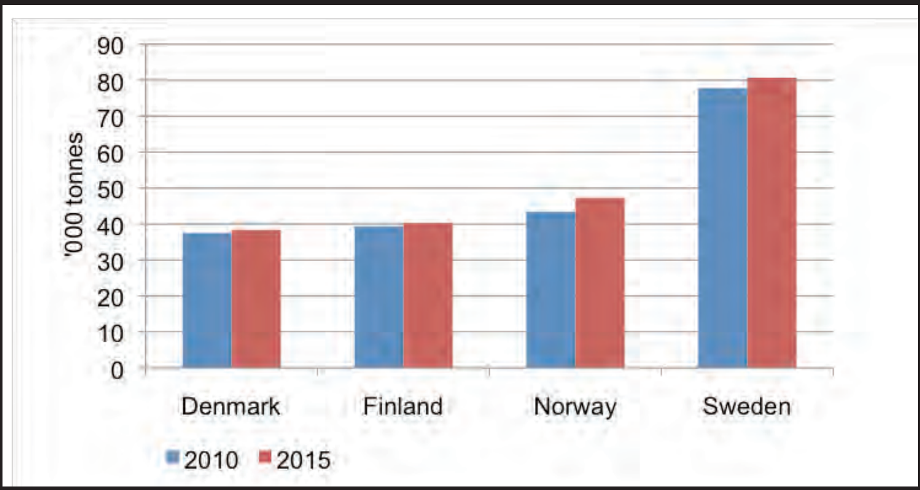


Table 1: *Retail sales, volume, '000 tonnes, 2010-2015*

By Euromonitor International's **Elvio Andrade** and **Carl-Filip Clausson**

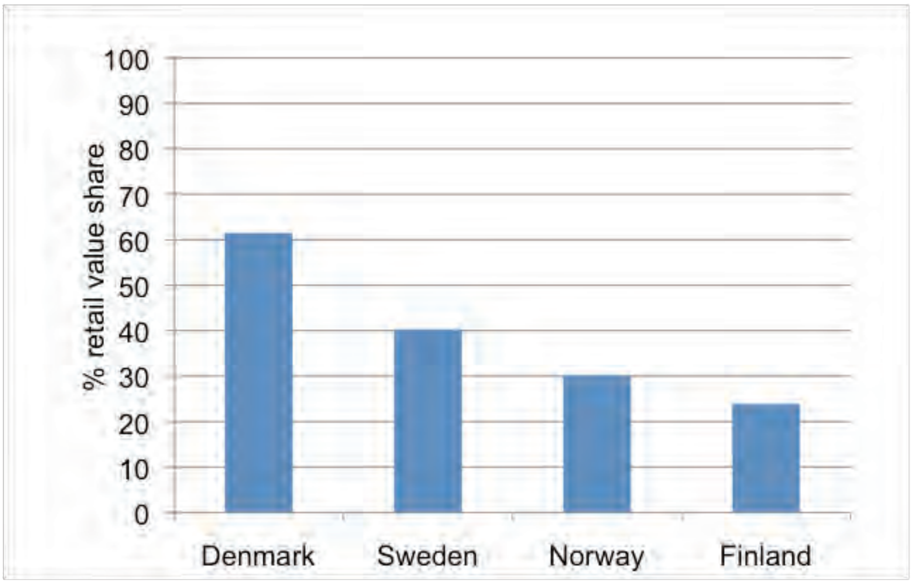


Table 2: *Private label tissue, retail value share, 2015*

It is worth noting, though, that scents might not be appropriate for all consumers and markets in the region. Danish consumers, for instance, actively seek tissue and hygiene products that are free from perfumes and allergens. To this end, Metsä Tissue's Lambi Deluxe toilet paper was the first in the marketplace to be certified by the Swedish Asthma and Allergy Association in late 2015.

Communicating health and environment

The emergence of products positioned as healthier due to allergen- and perfume-free formulations is, in a way, a continuation of a strong legacy of environmental awareness in the region. Recycled fibre has a long tradition on the Scandinavian market. In fact, within toilet paper – the largest tissue product category in the region – recycled products represent close to two thirds of total toilet paper retail value sales. The use of recycled fibre is not limited to branded products. Within private label, close to 90% of products are made with recycled fibre.

However, the use of recycled fibre in tissue products is so well entrenched in the region that it has all but lost its differentiating unique selling point. In Finland, for instance, many toilet paper brands and private label products are made with recycled paper. However, they are not positioned primarily as being eco-friendly. Furthermore, unbleached ecological toilet paper, which is more clearly marketed as eco-friendly, has largely disappeared in the country as consumers moved on to more appealing yet environmentally-friendly alternatives. The exceptions, however, can be found in Lotus Luonnonystävän (Lotus Friend of Nature) from SCA, which remains popular.

Recycled fibre aside, products positioned as environmentally friendly turn to the Nordic Swan Ecolabel to increase trust in product claims. The Ecolabel, when granted, assures a reduced environmental impact across the supply chain and product lifecycle – from production to waste management. Products made from both recycled and virgin fibre can carry the Ecolabel, provided they meet the criteria, such as for instance sustainable forest management or low levels of emissions, water and energy use.

The Ecolabel, thus, does not limit environmental benefits to the use of recycled fibres but rather takes a more holistic approach and looks at the entire product lifecycle. The presence of Ecolabel is used as an added benefit by brands and private label to communicate their value to consumers.

The emergence of products positioned as healthier due to allergen- and perfume-free formulations is, in a way, a continuation of a strong legacy of environmental awareness in the region.

Outlook and strategies ahead

A slow pace of economic growth, coupled with product commoditisation, is likely to heighten consumer attention in the region on value and value for money, supporting already well-established price sensitivity in the region, which is likely to further support private label and increase focus in brand strategies on balancing price and quality as well as communicating real value for money to consumers.

Additionally, the countries in the region might see more emphasis by leading manufacturers on product portfolio alignment and consolidation for more cost-efficient use of resources and support for core brands.

Despite the challenging environment, there is still room for innovation along premium lines. However, research indicates that the direction of innovation might differ, with countries like Denmark more receptive to added features that benefit health (such as allergen and scent free), with other countries in the region more open to products that incorporate oils and scents.

The Nordic Swan Ecolabel will continue to play a prominent role in a well-established environmental trend in the region. While already present across branded and private label products, it will remain an essential feature of consumer tissue in Scandinavia to assure eco-conscious consumers in the region of the manufacturers' efforts to reduce the environmental impact of the products throughout their lifecycle.

By Tissue World magazine editor **Helen Morris**

Back from the brink in Norway's dramatic Paper Valley

Amid the spectacular mountains and fjords, the story of a mill's survival is barely less impressive. After all looked lost in 2013, Vajda-Papir Scandinavia is now investing, becoming more efficient, planning 15% sales growth, targeting new markets and reaching for the top.

***Above:** The drive from Oslo takes us alongside the beautiful Drammensfjord and onto the river Drammenselva, until we reach the historic tissue mill*

Another stunningly beautiful journey along a magnificent fjord… and another stunningly well-constructed transport solution to ease our way.

As TWM is beginning to understand as so typical of Norway, the drive to Vajda-Papir Scandinavia's Drammen-based tissue mill is both exceptionally picturesque and very, very practical.

Norwegians are never phased about how to get around in freezing weather conditions, or potential obstacles such as hundreds of deep valleys or towering mountains: their response is simply to build impressive tunnels that go through or around, making transport by car, train or lorry across the entire country easy, efficient and fun.

This is all made evident in just a short 30-minute drive outside of Oslo to Vajda's mill. The approach takes us alongside the beautiful Drammensfjord and onto the river Drammenselva, until we reach the mill… it's snow-capped, of course.

Its story is as dramatic as the landscape which surrounds us.

O **Helen Morris**

Editor,
Tissue World magazine

The drive to Vajda-Papir Scandinavia's Drammen-based tissue mill is both exceptionally picturesque and very, very practical. Norwegians are never phased about how to get around in freezing weather conditions: their response is simply to build impressive tunnels.

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By Tissue World magazine editor **Helen Morris**

Greeted enthusiastically by managing director László Bagaméri, he explains – in excellent English – how the 104-year-old mill is steeped in history: "We're one of the last mills in the area. There used to be 15 mills here and the valley had the nickname of the Paper Valley. Almost all have since closed, and we're also one of the last tissue mills in the whole of Norway. We have survived, but it's been tough."

The site was acquired three and a half years ago by Hungary's Vajda Paper. "Vajda is the biggest converting mill in central Europe," he says. "They're expanding and looking to start up a new tissue machine in Hungary in 2017, which will be our sister company. It's a big plus for us as they have a lot of knowledge that we can incorporate here."

The 110-staffed site was ready to close down before Vajda acquired it in 2013. "We were in bad shape. It was a big issue locally – the local banks etc, they wanted to save the mill. It provides a lot of employment in the region and it's the last mill in the area. So it was a great opportunity to develop it."

In 2013, PM5 started up, producing 18,000tpy of 2ply and 3ply toilet tissue and kitchen towel along with two converting lines supplied by PCMC and Perini. Maximum tonnage on the Voith-supplied TM is now 24,000tpy, and the company is now producing more 3ply products. "We've almost doubled our production capacity here," he adds. "And next year we'll increase that to 27,000tpy."

There are no immediate plans for a new TM in Norway, but in the next five years the site would like to invest in a new TM. "We want to stay next to the river, it's very beneficial for us" he adds. "And once we make the investment, it will increase our capacity to 30-35,000tpy so it will be much higher. We'd like to invest in new technology to modernise, that's our long-term plan."

The company's main branded product is the "Ooops!" toilet tissue products in 4, 6 and 24 packs, and it also produces private label. Sweden's ICA is the site's largest customer, and Vajda produces 100% private label products for the business. The Baltic countries are also key target markets: "We'd like to start producing there, there's a lot of potential" he adds. It currently sells products mostly throughout Norway and also some into Denmark and Sweden. "The Swedish market is different from here, they're very keen on scented products for example, so it's another route of innovation for us.

"We want to stay next to the river, it's very beneficial for us" he adds. "And once we make the investment, it will increase our capacity to 30-35,000tpy so it will be much higher. We'd like to invest in new technology to modernise, that's our long-term plan."

"We want to balance the amount of private label we do with our own brand: at the moment, it's nearly 50/50 as private label is so popular. We want to balance that with our own brand, and with opportunities like creating anti-allergic products."

The site's backbone is in the river and fjord that sit alongside it: "We use a lot of water from the river, and what water we put back in compared to what we take out is even clearer. Our energy consumption has also decreased and we're using less CO^2 in our manufacturing." The site's CO^2 emissions have decreased more than 25% in the last five years: "We're bringing new technology here and it's making all the difference, we keep on investing and making energy savings." The site has environmental certificates such as the Swan, which Bagaméri says is very important for customers in this region.

Above: *"We're bringing new technology here and it's making all the difference," Vajda-Papir managing director László Bagaméri*

By Tissue World magazine editor **Helen Morris**

As for future challenges, he says the main issue is how the mill will survive and what needs to continue to be done to ensure that. The second issue is how it can improve its products.

Sales per year for the last few years have been €30m, and next year the company plans to increase that by 15%. "Considering where we were financially in 2013, we have made big strides forward. Investment has also included spending money on the building and areas and yards around the mill. It's been a tough challenge the last few years, but in 2016 we are now really seeing the benefits. We have turned the business around and into a new direction. Our efficiency is better, and it has enabled us to do new things and we will continue to evolve. The direction where we're now going is looking great, it's looking very positive."

New product launches are on the cards, and in the longer term investment in another PM. "We're proud of the mill, people thought it was hopeless. We're a lot more stable now."

As for future challenges, he says the main issue is how the mill will survive and what needs to continue to be done to ensure that. The second issue is how it can improve its products. "We're focusing on existing customers and also looking for new opportunities in Norway. We'd like a bigger market share here. And we'd like to see the Norwegian tissue market the same size as the Swedish one."

He adds that ideally, all products made here would be for the local Norwegian tissue market. "We'd like to acquire also, so that we can increase our capacity."

Another key challenge is oil prices: throughout Scandinavia, the economy is struggling because of the oil price. "All economic processes are driven by oil, so if we're seeing oil prices go up, it changes the currency exchange rates for everyone and so it impacts us all," he says. "Prices globally are driven by the US dollar, and when the Swedish Kroner is weak it also has a big impact for us."

The next couple of years will be focused on how the business can widen its market share in Norway. Pulp prices "are a gamble", and he adds there is no telling where they are going. "When Donald Trump takes on the presidency in January 2017, we have no idea where the dollar will go," he adds.

"And finally, we will look at how we can more efficiently run the mill. Not just the tissue paper but the whole business and how we interact with our customers. How can we go up to the top of the hill and stay there? We'd like to introduce the "Ooops!" brand further into the Norwegian market. It's been very successful in central Europe, we just need to increase its presence here as we only launched it here in Scandinavia three and a half years ago. It's the same with launching any new product, it will take time. In five years I'm confident it will be here alongside the best branded tissue products."

Private label will be a higher production level: "The customers here in the shops and their decisions are very much based around private label products. Their first choice is private label in central Europe and especially Germany, it's very price sensitive and they choose private label first. So it will be an interesting and challenging time. But with the changes we've made, while it's been tough we've survived. We're very proud to have this small mill here in Norway."

Above: *The site currently produces 18,000tpy of 2ply and 3ply toilet tissue and kitchen towel and has two converting lines supplied by PCMC and Perini*

By Tissue World magazine editor **Helen Morris**

Tradition and passion creates Sofidel's most advanced automated site

TWM interviews Robert Jensen, Sofidel Sweden, country operations manager, on the latest tissue trends in the region.

Sofidel's Swedish plant produces 56,000tpy of private label products, specialist tissue in jumbo reels and the Lycke products brand. The private label products are intended for the Nordic markets, in particular Sweden, Denmark, Finland and Norway.

TWM/1: What are the main opportunities for Sofidel in Scandinavia's tissue markets?
"We regard our "local heritage" and innovation as our main opportunities. Sofidel Sweden is a tissue company located in the Municipality of Kinda in Östergötland County, Sweden. There is a long history of paper-making on the site in Kisa, dating back to the 19th century when production of hand paper began in 1868. Since 2010 the company has formed part of the Italian group Sofidel.

"Today, it has a fully integrated tissue process that consists of the production of parent reels and finished consumer products. The new plant is currently the most automated production site of the Sofidel Group. It uses technologies that allows us to meet energy targets as well as drastically reduce water consumption. Furthermore, our "smart store" uses best-in-class technology: from laser-guided vehicles to fully automated machines. This innovation contributes in terms of maximising safety, minimising waste and having ultimate care for products."

TWM/2: What are the main challenges for you in Scandinavia's tissue markets?
"It's a market that appreciates values and consistency. It is not just about tissue. Scandinavia is not in general a market for quick wins. This is what has led to investment in automation so we can deliver safety and quality, and ultimately developing the trust with customers. Today, Sofidel's plant in Kisa is one of the largest in Scandinavia and one of the most modern facilities in the Nordic countries area."

TWM/3: How are you dealing with Scandinavia's substantial (but flat) tissue demand?

O **Helen Morris**

Editor,
Tissue World magazine

"The Scandinavian markets are highly competitive, with a few strong players. In this context we are trying to increase the quality of our products. This means aiming to maximise comfort and hygiene in tune with our customer and consumer needs and at the same time to minimise the environmental impact, reduce waste and promote responsible consumption. In general terms, it's about trying to de-commoditise tissue products by adding shared value."

TWM/4: What are the main tissue consumer trends you're seeing?
"Scandinavia is in the vanguard in terms of environmental consciousness. And in this regard, as a company that deeply believes in sustainability as a lever of growth, Sofidel is committed to guaranteeing shared values for all its stakeholders. Also in Sweden, one of our main objectives is to partner with stakeholders and decision-makers to help face key environmental and social topics starting from the tissue sector."

TWM/5: How have the economic conditions in Scandinavia presented opportunities and challenges for you?
"The main opportunity has been about developing a historic tissue site and renewing the original people's passion with an Italian touch. Regarding the challenges, the greatest one is to merge different cultures in order to meet new needs."

TWM/6: How are you aiming to grow in the region?
"In line with Sofidel's approach in Europe we aim to develop organic growth, driven by marketing, targeting the manufacture of products that offer an ever-shrinking ecological footprint."

By Tissue World magazine editor **Helen Morris**

A tough modern makeover for the table top star 'close to nowhere' in Västra Götaland

After closures and a sharp market re-focus, global coloured tissue leader Duni's SEK110m investment has brought its 5% mature market growth target into sight. Helen Morris journeys passed elk, lakes and forests to Skåpafors, Sweden.

Rexcell Tissue & Airlaid's managing director Stefan Åbom uses the words "fun" and "work" in the same sentence at least three times during our interview at the Skåpafors, Sweden-base site. He greets TWM warmly and proceeds to elaborate on just how the business has got to a stage where it can now combine the two. His comments aren't to be taken lightly. Rexcell, a wholly-owned subsidiary of Duni and a leading global manufacturer of professional and consumer table top products, is now solely focused on the manufacture of tissue and airlaid material, and is only just starting to reap the benefits of a series of structural changes and business realignments.

The last few years have seen it re-focus its market strategy with research into consumer habits, and coupled with changing economic conditions it has meant that Rexcell has changed substantially in recent years.

Located in the Bengtsfors Municipality in Västra Götaland county, the remote location is set amongst beautiful lakes popular amongst tourists and locals alike. The 30-minute drive from the nearest local train station takes TWM past mile after mile of elk and stunning forest to get to the site, which was originally established as a pulp and paper mill in 1874. It is as historic as it is modern; a SEK110m investment in TissueLev technology was made in 2016 to upgrade its two tissue machines, resulting in new and innovative tissue product launches that are on the cards.

O **Helen Morris**

Editor,
Tissue World magazine

Above: Adapting to current trends and restructuring has led to new and innovative tissue product launches

"Demand for Duni's premium products is increasing in Europe despite fluctuating economic conditions. People are dining out more and they want higher quality products for events."

Rexcell and Duni's Thomas Lööb

By Tissue World magazine editor **Helen Morris**

Above: *A SEK110m investment in TissueLev technology was made in 2016 to upgrade the site's two tissue machines*

The move increased the site's tissue capacity to 52,000tpy. "We needed to increase capacity to set a new base for further development and have new platforms for products, and in order to realign our business model," Åbom says.

Some 99.5% of the site's brightly coloured and white paper products are then exported to its sister converting sites in the thriving neighbouring markets of Germany and Poland.

The mill is also home to a paper machine which produces 12,000tpy of airlaid products – Abom says Duni was the first company in Europe to commercialise airlaid technology within table top and napkins. "It's a benchmark for table top," he adds. "And then for tissue, we have over 100 years of experience. So while we're a niche player for tissue, we're a benchmark for coloured tissue grades."

Åbom was brought in as managing director in 2012 and has overseen the recent investment. In his office (which boasts an equally modern "standing-up" desk), we're joined on Skype by Thomas Lööb, corporate development director and chairman of the Rexcell board, and also part of the management team at Duni.

Lööb says the investment was a vital one: "It not only enabled the site to re-focus on a niche market, but also increased its tissue capacity by 15%. Rexcell saw the possibility of developing a new quality standard for tissue napkins. We needed to invest in higher efficiency and upgraded materials and we closely followed the changing market demands so that our business decisions were closely aligned with consumer patterns. The investment also enabled us to launch new products."

As early as 2013, Duni had announced its decision to close the production of hygiene materials at Rexcell and concentrate all remaining production at the facility in Skåpafors. In October 2015, it closed its neighbouring Dals Långed mill, re-focusing its efforts on tissue and airlaid production at its Skåpafors plant since demand for Duni's premium products were increasing, leading to larger future capacity needs.

Duni today is a global market leader in the production of coloured tissue for napkins, supplying innovative table top concepts, creative packaging and take-away to hoteliers, restaurants and caterers as well as consumers.

It has products in over 40 markets and 2,200 staff in 19 countries. With its headquarters in Malmö, Sweden, there are production units in Sweden, Germany, Poland and - most recently – in Thailand. In August 2016, Duni finalised the acquisition of a 60% share in disposable products converter Terinex Siam. Lööb says that Duni continues to prioritise growth in Asia: "We know that tissue is not used in exactly the same way in that part of the world when compared with Europe and America. Terinex Siam was the consequence of the 2012 acquisition by Duni of Singapore-based Song Seng, which created a foothold in the market. Terinex Siam is a leading converter and exporter of disposable products, predominantly paper napkins, and as with Duni, it specialises in the professional segment in Southeast Asia. So Duni now has a presence reaching as far and varied as Singapore, Thailand, New Zealand and Australia."

Lööb adds that while Europe is still Duni's primary focus, South East Asia and Oceania are certainly interesting. "Demand for Duni's premium products is increasing in Europe despite fluctuating economic conditions. People are dining out more and they want higher quality products for events. Our sales follow a seasonal cycle; we're very busy during summer, Christmas and Easter."

In October 2015, Duni closed its neighbouring Dals Långed mill, re-focusing its efforts on tissue and airlaid production at its Skåpafors plant since demand for Duni's premium products were increasing, leading to larger future capacity needs.


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By Tissue World magazine editor **Helen Morris**

Above: *Rexcell Tissue & Airlaid's managing director Stefan Åbom*

Åbom adds that the new set up means they will not need to stop and start seasonally: "We're a market-orientated company, we need to be quick with market changes, we need to be flexible. The main challenges are related to producing numerous colours and with premium quality.. it is paramount to produce high quality products in a flexible yet energy efficient manner."

Duni has a lower market share in southern Europe, a current focus region for the company. However, growth won't necessarily be through investment. Lööb says: "It's about how we invest in the market generally. We're definitely looking to grow in southern Europe and Asia and we're also looking to export into new regions." Following the acquisition of Paper + Design in Wolkenstein, the business is also now exporting high quality printed napkins to countries such as New Zealand, Canada and the United States. "And a lot of the time these are personalised products for a dinner party rather than for a restaurant," he adds.

"Our core business includes the development of new materials, enabling us to keep our leading position."

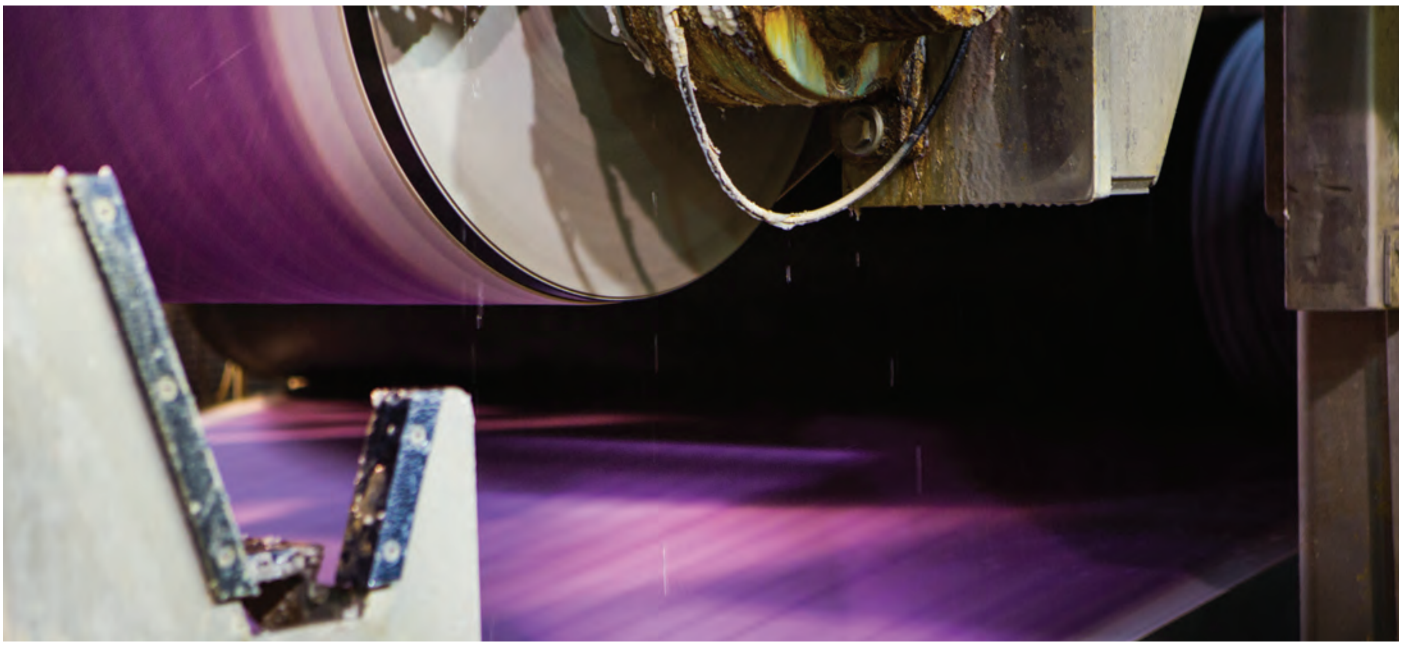
Lööb says the markets they are in are very fast paced: "It wasn't always the case, but now we go into these markets and are market orientated and we have to be flexible. We would like to have solutions to offer our customers and even be one step ahead of the market changes. Our business now is to understand market needs and our strength is development."

"We're seeing tissue growth of 3-4% in northern Europe. At the Duni Group, our growth target is 5%. That's a tough target in a mature market."

Åbom adds: "We are one of the most modern tissue mills. We have a lot of knowledge despite being out in the countryside and gain extensive market and customer knowledge due to our integration with the sites in Poland and Germany."

"The last few years have been a tough process of consolidation," he concludes. "We had four factories, but we have chosen to focus 100% on the table top sector. This implied tough reductions, but we are now more effective and improving quality continuously. The journey has been challenging, but now we're beginning to harvest the benefits of our hard work."

Following the acquisition of Paper + Design in Wolkenstein, the business is also now exporting high quality printed napkins to countries such as New Zealand, Canada and the United States. "And a lot of the time these are personalised products for a dinner party rather than for a restaurant," Lööb adds. "Our core business includes the development of new materials, enabling us to keep our leading position."



Above: *Following technology investments, the site's core business includes the development of new materials and products*

What also distinguishes Sweden's tissue-making sector is that it is part of an exclusive club of net-exporters in Europe. Only Germany, Spain, Finland and Italy can claim the same distinction. Sweden produces nearly twice as much tissue as it consumes.

Focus on Sweden: a nation of tissue lovers

Ten million Swedes are second only to the US in per capita consumption. It's all down to a historic affinity with the trees and forests covering the landscape ... from sapling to harvest providing jobs, buildings, homes, membership of an exclusive club of tissue net-exporters, and a source of national pride.

O Marcus Hellberg

Head of marketing and business development at Södra Cell

Sweden is at the forefront of tissue. There are not that many of us (a little less than 10 million), so we won't make any headlines in terms of absolute consumption. We use just short of 200,000 tonnes per year – half a dozen decent-sized tissue machines would cover it.

But per capita consumption tells a different story. Sweden leads Western Europe in this respect at nearly 20kg per capita compared with a Western European average nearer 15 kg. Only the USA consumes more tissue per capita than Sweden.

It's not because the bracing Scandinavian climate results in high use of facial tissue – this particular category is not dominant. The explanation lies partly in a strong economy, which is always a pre-requisite of high tissue consumption. But that is not the whole story, because the highly-developed economies of France and Italy have never even reached 14kg/capita.

One thing which distinguishes Swedes as tissue consumers is the relationship we have with wood. Sweden is not excessively reliant on timber for its economic wellbeing, but it remains a very visible, historically-important material in our lives.

It covers much of the landscape, forms many of our buildings and most of us know somebody whose living is wholly or partly dependent on wood or wood-based products.

It is also plain to see that this resource is sustainable - the continuous cycle from sapling to harvesting is evident to anyone who ventures out of town.

Swedes are therefore positive about the use of products derived from wood. As a result they are receptive to a quality product and willing to see tissue as more than a commodity. Both brands and private label, the latter gradually gaining market share from a comparatively low level, are widely sold on the basis of added value qualities such as bulk and softness.

Design and embossing are also well accepted, but colour and scent just haven't taken off. With such plentiful raw material on the doorstep, virgin fibre is the raw material of choice.

This enthusiasm among the people for wood-based products also explains the popularity of paper towel for hand-drying compared with hot-air alternatives, and the use of kitchen towel in the home. Away-from-home towel is popular throughout the Nordic region, as is kitchen towel, and both have grown quite strongly in the past decade.

This is likely to fuel growth for the foreseeable future in an otherwise mature market for tissue. Toilet tissue remains the largest sector in terms of consumption, but towel is catching up.

What also distinguishes Sweden's tissue-making sector is that it is part of an exclusive club of net-exporters in Europe. Only Germany, Spain, Finland and Italy can claim the same distinction. Sweden produces nearly twice as much tissue as it consumes, with parent reels being shipped to the rest of the Nordic countries, the UK and continental Europe.

Sweden's tissue producers are no longer exclusively Swedish but have a very international profile. They are at the forefront of tissue making and converting. Sofidel, for example, entered the fray in 2010 when they took over LPC's assets in Sweden. The company's Kisa site is said to be the group's most innovative and automated since its upgrade in 2015.

Metsä Tissue has also invested in sophisticated new converting technology in the past few years at Katrinefors, Mariestad. In the more niche area of table napkins, Duni's subsidiary Rexell Tissue & Airlaid upgraded and boosted capacity in 2015 at its Skåpafors mill.

Then of course there is Western Europe's largest tissue producer, SCA Hygiene, with its 100,000+ tpy mill at Lilla Edet and facilities throughout Europe, boosted earlier in the decade by its acquisition of GP's European assets.

It is a give-and-take relationship with these significant international players. In Sweden they benefit from their proximity to a certified fibre source, pulp expertise and also from the healthy local consumer market. You can be sure that the 2016 WWF Environmental Paper Awards earned by Sofidel and Metsä Tissue owe something to their experience in Sweden.

In turn these businesses can draw on group-wide technical expertise and experience, ensuring that Sweden remains a centre of tissue production excellence. There is no doubt that international ownership brings new skills and perspectives and the machinery sector in the Nordic region is very strong, too.

Compared with market pulp, graphic paper and board, tissue is a relatively minor player in the Swedish forest products market. But, tissue is in the ascendancy compared with most grades, and Sweden is leading the way.

By FOEX Indexes' **Lars Halén** and **Timo Teräs**

PIX Pulp indices 27.9.2016

PIX Pulp indices 22.11.2016

NBSK pulp Europe: The softwood pulp market remains relatively stable. Price pressures have, however, recently been rather downwards than upwards, in spite of the so far quite good delivery volumes and low producer stocks.

One reason for this has been the strength of the dollar. Euro-prices have, in fact, headed upwards in Q4 and are now 3.4% higher than in the beginning of the year. The other reason is the suspicion, without proof, that the softwood consumer stocks are high in Asia. European consumer stocks, released by UTIPULP, show that consumer stocks in Europe are low, in October down by nearly 3% from September and by nearly 9% against October 2015.

Softwood market pulp consumption was up in October by 3.6% from September and by 2.8% from October 2015. Our PIX NBSK index slipped lower, as it retreated by 26 cents, or by 0.03%, and closed at 808.51 USD/tonne. US dollar strengthened against the Euro by as much as 2.4% (weekly average).

With the further weakening of the Euro against the US dollar, the benchmark value in euro, converted from the dollar value index with the average exchange rate of week 46, moved up from the previous week by 18.03 euros, or by 2.45%, and the PIX NBSK index value in euro-terms settled at 754.35 EUR/tonne.

"European consumer stocks, released by UTIPULP, show that consumer stocks in Europe are low, in October down by nearly 3% from September and by nearly 9% against October 2015."

BHK pulp Europe: In BHKP, basic numbers appear weak with market BHKP demand up this year less than in softwood and with producer stocks high, at least still at the end of September. The market shows some signs of strengthening, however. October shipments are assumed to have gone up. That will be verified in a couple of days after writing these notes.

Speculative buying, in view of project delays and increased downtime, helps demand side. At least one modest price increase announcement has been made in Europe. The decline of our PIX BHKP index value came to a halt, at least temporarily, as the benchmark value moved this time back up by 1.31 USD/tonne, or by 0.20%, and closed at 654.79 USD/tonne. The value of the Euro depreciated last week by 2.4% against the US dollar (weekly average). When converting the USD value of the BHKP benchmark into the weakened Euro, the PIX BHKP index value headed higher by 15.99 euro, or by 2.69%, and closed at 610.93 EUR/tonne.

Lars Halén

Senior manager, FOEX Indexes

Timo Teräs

Managing director, FOEX Indexes

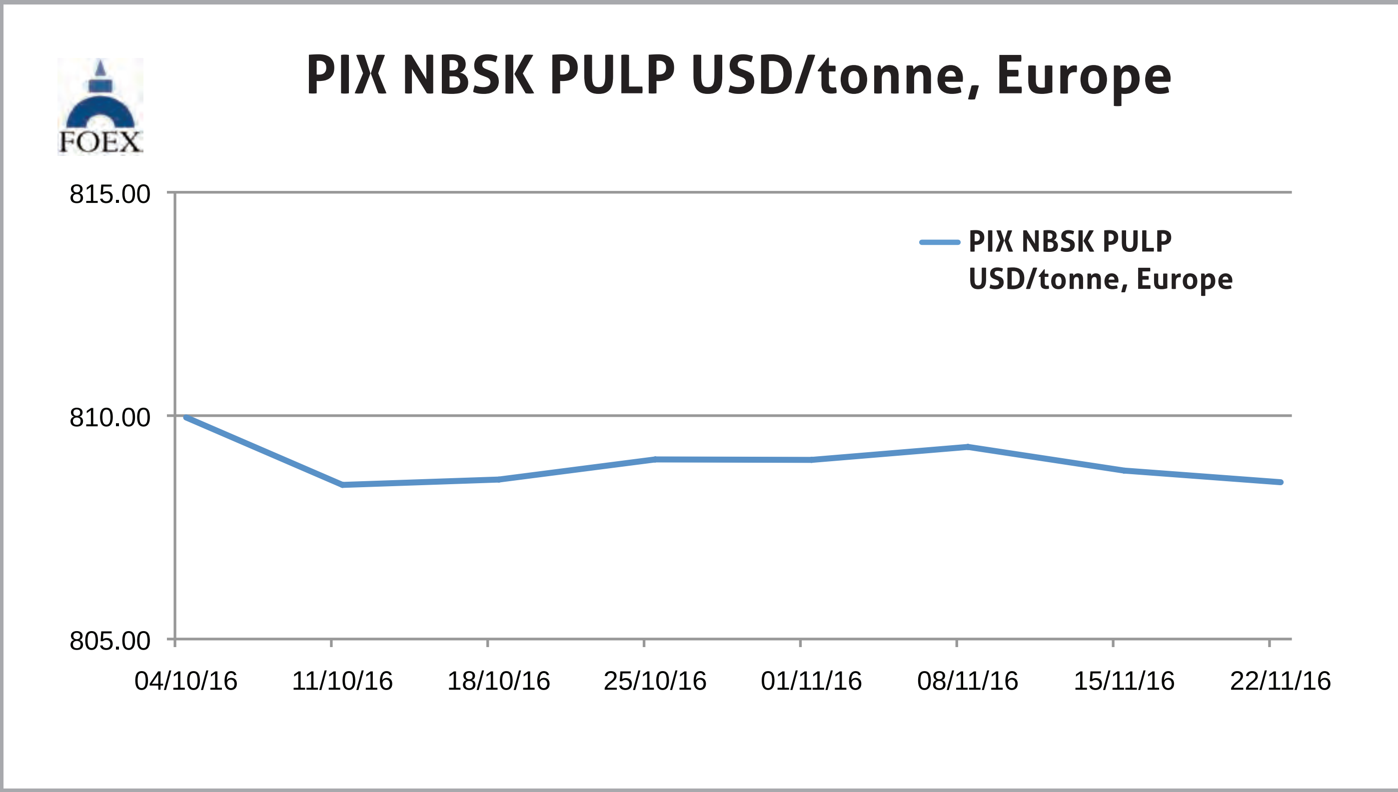
Paper industry: The so far available data over the paper industry activity in October is predominantly positive. US box shipments were up by just over 4% against October 2015, when taking into account the lower number of shipping days in 2016. Total containerboard production was up by 1.3%, year-on-year. While modest, this was still better than the so far 0.4% cumulative gain. The best news was that the containerboard stocks fell by 140 000 tonnes, to the lowest level seen in four years in week's supply terms. Not too surprisingly, the price increase attempts made from 1 October were pushed through by the market strengthening, with a lot of help from hurricane Matthew.

Containerboard market has done quite well also in Europe. October numbers are not available yet but during the first three quarters, European demand was reportedly up by 3.1% and the news from the market suggest that the rate of activity remained satisfactory also in October. Graphic paper data is not available, except for the US uncoated free sheet which, taking into account the one less shipping day, was down but only by 0.1% against a fairly strong October 2015. Finally, US boxboard production was up by about 2%, year-on-year.

"The value of the Euro depreciated last week by 2.4% against the US dollar (weekly average). When converting the USD value of the BHKP benchmark into the weakened Euro, the PIX BHKP index value headed higher by 15.99 euro, or by 2.69%, and closed at 610.93 EUR/tonne."

By FOEX Indexes' **Lars Halén** and **Timo Teräs**

Source: FOEX Indexes



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Tissue papers are produced either from virgin fibre, recovered fibre and various mixes of both, depending on the end product. High quality hygiene tissue products like medical tissue products, facial tissues, table napkins or other such household and sanitary products are often made exclusively or almost exclusively from virgin fibre pulp, whereas the share of recovered fibre typically increases in tissue products for a variety of end uses outside personal hygiene, such as kitchen towels or towels for garages or other such industrial production facilities etc. Providing PIX pulp price indices gives the paper producer and buyer insight in the price trends with a weekly frequency. PIX indices are used as market reference prices e.g.

- *by banks or exchanges that offer price risk management services for pulp buyers and sellers*
- *by buyers and sellers of pulp or paper in their normal supply contracts*
- *companies who want to employ an independent market reference price for internal pricing (e.g. pulp mill – paper/paperboard mill, paperboard mill – box plant) through licensing the commercial use from FOEX.*

In addition, our price indices are widely used in financial analysis, market research and other such needs by all kinds of parties linked directly or indirectly to forest product or wood-based bio-energy industries.

This way the companies have better tools to budget their cost or income structure and profitability, and may concentrate on their core businesses with less time spent on price negotiations, which tend to increase in these days as the planning span narrows in the wake of the short, quarterly business cycles and, nowadays, in most cases, monthly raw material pricing decisions.

From the Himalayas to city life – a modern-day nomad's world of tissue

Gary J. Carroll is an adventurer and professional photographer. Born in Birmingham, England, he travels the world as a street/urban photographer exploring different cultures, infrastructure and day-to-day living.

" I recently spent a month in the Himalayas living in a small village where they did have toilets but did not dispose of paper in them. The alternative is to use water and then a hand sanitizer. I'm currently in Asia where it is common place to use a water pump next to the toilet for cleaning oneself."

When I live in one place for a period of time and live in an apartment, I use the common-placed products such as toilet paper, kitchen roll and surface wipes, but because I live a nomadic life I can find myself in cultures or situations where none of the above products I mentioned are available or necessary.

I recently spent a month in the Himalayas living in a small village where they did have toilets but did not dispose of paper in them. The alternative is to use water and then a hand sanitizer. I'm currently in Asia where it is common place to use a water pump next to the toilet for cleaning oneself.

When I do buy tissue products, whether it's toilet paper, kitchen roll or surface wipes, I'm definitely seduced by labelled products because of their perceived quality, especially when it's toilet paper. I have tried alternatives in the past and I don't think the quality of the product is as good.

Before I was living a nomadic life I never gave much thought to environmental issues regarding cleaning products. That has now changed since I have been exposed to various cultures and observed first-hand how we don't treat the planet, our home, with respect. I think we all play our part in being kind to planet earth but some cultures are more fortunate to have better infrastructure in place than others.

I've spent most of my adult life between the UK and Australia where all kinds of tissue is available, with many choices and quality. Everything you need is in every supermarket, £1/$2 shops and the internet where a product can be ordered today and be with you tomorrow.

The quality of tissue products is definitely very different throughout western nations. We are spoilt for choice in the UK and Australia, where the availability and quality is excellent. In the developing nations I've spent time in they tend to use much less tissue paper opting for water jets instead or self-clean products and water. I find the quality of tissue paper in developing parts of Asia to be poor and not as easy to come by, but then they don't use it as much as the western world.

Project Survey

While 2016 has gone down in history for the many significant global events that took place, for the tissue industry it's been a slightly more subdued period according to this year's annual Projects Survey.

TWM's annual survey charts all new capacity being added, ordered or in final planning stages during 2016-2017. The survey is interested in projects that will increase tissue capacity – the numerous smaller rebuilds around the world that won't impact capacity have been excluded.

COUNTRY	COMPANY MILL	INVESTMENT	PM NO	NEW / REBUILD	START-UP DATE	CAPACITY CHANGE (tonnes/yr)	PM TRIM (m)
Abu Dhabi	Fine Hygenic Holding	Al Nakheel	NA	New	2017	60,000	5.6
Argentina	Celulosa Campana	NA	3	New	2017	100tpd	2.7
Argentina	Celupaper	Papelera Nicaragua	3	New	2016	13,600	2.7
Argenina	Celupaper	Papelera Nicaragua	4	New	2017	22,750	2.75
Asia	Confidential	Confidential	NA	New	2017	NA	3.5
Asia	Confidential	Confidential	NA	New	2017	NA	3.5
Asia	Confidential	Confidential	NA	New	2017	NA	3.5
Asia	Confidential	Confidential	1	New	2018	60.000	5.6
Asia	Confidential	Confidential	2	New	2018	60,000	5.6
Asia	Confidential	Confidential	2	New	2018	60,000	5.6
Asia	Confidential	Confidential		New	2017	60,000	5.6
Asia	Confidential	Confidential		New	2017	60,000	5.6
Asia	Confidential	Confidential	2	New	2017	60,000	5.6
Asia	Confidential	Confidential		New	2017	60,000	5.6
Asia	Confidential	Confidential		New	2017	60,000	5.6
Bangladesh	Bashundhara Paper Mills	NA	4	New	2017	Confidential	2.85
Bangladesh	Meghna Group of Industries	NA	1	New	2017	50tpd	2.8
Brazil	Carta Fabril	Anápolis	6	New	Confidential	NA	5.55
Brazil	Cia. Canoinhas	NA	4	Rebuild	2016	34.,500	2.8
Brazil	Confidential	NA		New	2016	45,600	2.8
Brazil	Confidential	NA		New	2016	70,000	5.6
Brazil	Confidential	NA	4	New	2016	28,800	2.8
Brazil	Copapa	NA	4	New	2016	27,860	2.8
Brazil	CVG	NA	5	Rebuild	2016	27.800	2.8
Brazil	Fex Papeis	NA	1	Rebuild	2017	14,400	2.8
Brazil	Manikraft	NA	3	Rebuild	2016	18,000	2.3
Brazil	Mili	NA	8	New	2016	38,300	2.8
Brazil	Suzano Papel e Celulose	NA		New	2017	70,000	5.6
Brazil	Suzano Papel e Celulose	NA		New	2017	70,000	5.6
Confidential	Confidential	NA	1	New	2018	136tpd	3.6
Confidential	Confidential	NA		New	2017	60,000	5.2.
Confidential	Confidential	NA		New	2017	60,000	5.6.
Confidential	Confidential	NA		New	2018	60,000	5.6
Confidential	Confidential	NA		New	2018	NA	NA
China	Baodingshi Gangxing Paper	NA	5	New	2016	17,000	2.8
China	Cheng Loong	NA	16	New	2016	45,000	3.68
China	Confidential	NA	1	New	2016	200tpd	5,6
China	Confidential	NA	15	New	2016	232tpd	5.6
China	Confidential	NA	5	New	2016	17,000	2.8

Project Survey

By Tissue World magazine editor **Helen Morris**

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All the figures in the survey are based on the best information provided and this has included TWM's own extensive research as well as relying on reliable responses from companies asked to detail their present and future developments.

It also includes first-hand knowledge gained from the many visits to tissue mills around the world for TWM's bi-monthly Country Reports analysis, which during 2016 included visits to your peers and competitors in the American north-east, Egypt and Jordan, Vietnam, Colombia, Iran and India.

PM SPEED (m/min)	SUPPLIER	COMMENTS
2200	Valmet	Advantage DCT 200TS with ViscoNip press
1700	Recard	Crescent former
1000	Toscotec	MODULO
1300	Toscotec	MODULO-PLUS
1600	PMP	Intelli-Tissue® 1600 Advanced
1600	PMP	Intelli-Tissue® 1600 Advanced
1600	PMP	Intelli-Tissue® 1600 Advanced
2000	Toscotec	AHEAD-2.0L PRODERGY with TT SYD-22FT
2000	Toscotec	AHEAD-2.0L PRODERGY with TT SYD-22FT
2000	Toscotec	AHEAD-2.0L PRODERGY with TT SYD-22FT
2000	Toscotec	AHEAD-2.0L PRODERGY with TT SYD-22FT
2000	Toscotec	AHEAD-2.0L PRODERGY with TT SYD-22FT
2000	Toscotec	AHEAD-2.0L PRODERGY with TT SYD-22FT
2000	Toscotec	AHEAD-2.0L PRODERGY with TT SYD-22FT
2000	Toscotec	AHEAD-2.0L PRODERGY with TT SYD-22FT
2000	Andritz	PrimeLineCOMPACT VI (Steel Yankee)
1050	Recard	Easy Crescent former
2100	Andritz	PrimeLineST W22 with Steel Yankee (22 ft.)
2000	Hergen	
2200	Hergen	New Crescent Former Avantis 18
2000	Voith	Voith VTM4 with NipcoFlex T shoe press & Steel Yankee
1600	Hergen	Complete tissue machine and stock preparation
1600	Hergen	Complete paper machine EVO 12
1600	Hergen	New Crescent Former section EVO 12
1100	Hergen	New compete former section
1100	Hergen	New Crescent Former and felt section EVO 12 + New Gas Hood
2200	Hergen	New Complete Paper Machine AVANTIS 18
2000	Voith	VTM 4 with NipcoFlex T shoe press, Steel Yankee
2000	Voith	VTM 4 with NipcoFlex T shoe press, Steel Yankee
1780	Recard	New Crescent Former/Turnkey plant
2000-1800	Valmet	Advantage NTT 200
2200	Valmet	Advantage DCT 200
2200	Valmet	Advantage DCT 200
NA	Valmet	Advantage ThruAir
1000	Kawanoe Zoki	BF1000S
2000	Voith	VTM 3 with NipcoFlex T shoe press, Steel Yankee & Steam Hood; World record with steam hood
1800	A.Celli	
2000	A.Celli	
1000	Kawanoe Zoki	BF-W10S

We aim to meet tissue mills that have news that relates to you – a new tissue machine start-up, a new products launch, new export target markets. The visits give TWM a unique in-sight into why that region and its tissue players are investing or not.

TWM's annual survey charts all new capacity being added, ordered or in final planning stages during 2016-2017. The survey is interested in projects that will increase tissue capacity – the numerous smaller rebuilds around the world that won't impact capacity have been excluded.

While this year's figures may be a little more subdued when compared to that of 2015 and 2014's, looking across the many financial and manufacturing sectors of the world's economies and it's evident that tissue and new tissue machinery start-ups are still fairing very well indeed.

For this year, as with last, many of the projects are subject to revision as, in many cases, information was not provided because it was deemed commercially sensitive or subject to financial uncertainty.

It's also the case that a distinctive feature of this time in the cyclical development of tissue production is marked by the timely closure of old facilities to make way for the new.

Project Survey

In some cases, delayed start-ups have meant projects have been repeated from last year's survey; some of the 'new' capacity announced this year in fact includes some of last year's estimate. It came apparent when compiling this year's survey that many projects have been purposefully delayed, largely to deal with overcapacity or economic conditions. Additionally, a number of companies also issued projections for impressive tonnes per day figures, which will add, in the terms of the survey, unknown capacity.

COUNTRY	COMPANY MILL	INVESTMENT	PM NO	NEW / REBUILD	START-UP DATE	CAPACITY CHANGE (tonnes/yr)	PM TRIM (m)
China	Confidential	Confidential	1	New	2017	32,000	3.4
China	C&S Paper Co	NA	3	Rebuild	2016	10,000	2.6
China	Guangxi Guihai Forest & Pulp-Paper	NA	1	New	2016	17,000	2.8
China	Guangxi Guihai Forest & Pulp-Paper	NA	2	New	2016	17,000	2.8
China	Guizhou Chitianhua	NA	5	New	2016	NA	5.6
China	Guizhou Chitianhua	NA	6	New	2017	NA	5.6
China	Hebei Jinboshi Group	Baoding City	1	New	2017	17,300	3.65
China	Hebei Jinboshi Group	Baoding City	2	New	2017	17,300	3.65
China	Hengan	NA	1	New	2017	25,000	2.8
China	Hengan	NA	2	New	2017	25,000	2.8
China	Hengan Chongqing	Chongqing	23	New	2017	60,000	5.6
China	Hengan Chongqing	Chongqing	24	New	2017	60,000	5.6
China	Hengan Wuha Paper Co	Wuhu, Anhui	20	New	2016	60,000	5.6
China	Lee & Man	NA	5	New	2016	60,000	5.6
China	Lee & Man	NA	6	New	2016	60,000	5.6
China	Lee & Man	Chongqing	7	New	2016	60,000	5.6
China	Lee & Man	Chongqing	8	New	2016	60,000	5.6
China	Lee & Man	NA	9	New	2017	70,000	5.6
China	Lee & Man	NA	10	New	2017	70,000	5.6
China	Lee & Man	NA	11	New	2017	60,000	5.6
China	Lee & Man	NA	12	New	2017	60,000	5.6
China	Shandong Dongshun Paper	NA	2	New	2016	18,000	2.9
China	Sichuan Shubang Industrial	NA	1	New	2016	17,000	2.8
China	Shandong Hengan Paper Co	Weifang, Shandong	21	New	2016	60,000	5.6
China	Shaoxing Welfare Paper	NA	5	New	2016	17,000	2.8
China	Vinda Paper	Jiangmen, Guandong	10	New	2016	32,000	3.4
China	Vinda Paper	Jiangmen, Guandong	9	New	2016	32,000	3.4
China	Vinda Paper	Shandong	4	New	2016	32,000	3.4
China	Vinda Paper	Zhejang	3	New	2017	28,800	3.4
China	Vinda Paper	Zhejang	4	New	2017	28,000	3.4
Confidential	Confidential	NA	NA	NA	2017	110tpd	2.8
Egypt	Alex Converta	NA	1	New	2017	78tpd	2.8
Egypt	Hayat Kimya	NA	6	New	2016	70,000	5.6
Europe	Confidential	NA	NA	New	2016	145tpd	2.8
Italy	Ariete	Salerno	1	New	2017	29000	2.7
Japan	TRY-FU	NA	2	New	2016	25,000	2.2

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With that in mind, in the past 12 months the global tissue industry has seen another substantial amount of new capacity announced or coming on stream, with 111 projects. This is compared to last year's 126 projects, which was down from 146 in 2014.

Most of this year's projects are once again set in China, which claims 35 projects – the same number as it claimed in 2015's survey. Outside of China, growth is still focused on or from countries such as Brazil which claims 12 projects in this year's survey and of course America, which claims nine. South Africa has four projects while Turkey – another star market – has three.

Overcapacity in many markets has evidently resulted in a slowdown of new project announcements.

As with last year, the scale of these machines is also significant – a large proportion of these new start-up machines have widths of 5.6m.

It should also be noted that 2015 was an above-average year for the global tissue business, with worldwide tissue consumption growing by 34.8 million tonnes and the global growth rate of tissue consumption at 4.0%.

According to figures from RISI, this compares to 3.2% growth in 2014 and 2013, 3.5% in 2012 and 3.6% in 2011.

The growth rates for 2016 have yet to be confirmed at the time of going to print and countries that had previously been picked as having star growth potential have faltered.

There was also significant slowing of growth in China – interesting 2016 was the year that saw tissue giant Asia Pulp & Paper announced that it was halting its expansion in the country in the face of oversupply, although it said it was to continue its expansion in Indonesia.

In 2017, TWM endeavours to bring you more in-depth analysis on tissue mills and their projects across the world with our Country Reports focused on countries as far ranging as Japan, Nigeria, Ireland, Canada, Brazil and Italy.

PM SPEED (m/min)	SUPPLIER	COMMENTS
1200	Toscotec	TADVision
800	Kawanoe Zoki	BF-10
1000	Kawanoe Zoki	BF1000S
1000	Kawanoe Zoki	BF1000S
1800	Andritz	PrimeLineST W20 (Steel Yankee)
1800	Andritz	PrimeLineST W20 (Steel Yankee)
1200	PMP	Intelli-Tissue® 1200 EcoEc
1200	PMP	Intelli-Tissue® 1200 EcoEc
1600	Toscotec	Modulo-Plus ES
1600	Toscotec	Modulo-Plus ES
2000	Andritz	PrimeLineTM W8 (Steel Yankee)
2000	Andritz	PrimeLineTM W8 (Steel Yankee)
1.900.	Valmet	Advantage DCT 200
2000	Valmet	Advantage DCT 200HS with ViscoNip press
2000	Valmet	Advantage DCT 200HS with ViscoNip press
2000	Valmet	Advantage DCT 200HS with ViscoNip press
2000	Valmet	Advantage DCT 200HS with ViscoNip press
2000	Voith	VTM4 with NipcoFlex T shoe press, Steel Yankee & Steam Hood
2000	Voith	VTM4 with NipcoFlex T shoe press, Steel Yankee & Steam Hood
2000	Voith	VTM 4 with NipcoFlex T shoe press, Steel Yankee & Steam Hood
2000	Voith	VTM 4 with NipcoFlex T shoe press, Steel Yankee & Steam Hood
450	Kawanoe Zoki	BF1200TW – Heavy weight towel
1000	Kawanoe Zoki	BF1000
1900	Valmet	Advantage DCT 200
1000	Kawanoe Zoki	BF-W10S
1600	Toscotec	AHEAD-2.0M
1600	Toscotec	AHEAD-2.0M
1500	Toscotec	AHEAD-1.5M
1500	Toscotec	AHEAD-1.5M
1500	Toscotec	AHEAD-1.5M
1800	A.Celli	
1500	Recard	Crescent former
2200	Valmet	Advantage DCT 200TS with ViscoNip press
2000	Recard	Crescent former
1600	Toscotec	MODULO-PLUS
300	Kawanoe Zoki	BF15-Heavy weight towel

Project Survey

COUNTRY	COMPANY MILL	INVESTMENT	PM NO	NEW / REBUILD	START-UP DATE	CAPACITY CHANGE (tonnes/yr)	PM TRIM (m)
Japan	Confidential	NA	2	New	2017	29.000	3.3
Japan	Confidential	NA	3	Rebuild	2016	22,000	2.5
Japan	Confidential	NA	5	Rebuild	2016	26,000	3.28
Japan	Confidential	NA	3	Rebuild	2017	22,000	2.5
Japan	Confidential	NA	2	Rebuild	2017	26,000	3.28
MEA	Confidential	NA	NA	New	2017	NA	2.8
Mexico	Convertipap	NA	5	New	2017	90tpd	2.8
Mexico	Papel San Francisco	Mexicali	7	New	2017	30,000	2.8
Peru	Papelera Reyes	NA	4	New	2016	19,600	2.8
Poland	Confidential	NA	1	New	2017	28.800	2.8
Poland	Sofidel Spa	Ciechanów	NA	New	2018	60,000	5.2.
Poland	WEPA	Piechowice	NA	New	2017	35,000	2.8
Portugal	Paper Prime	Vila Velha de Rodao		New	2017	42,000	2.7
Portugal	Renova	Torres Novas	NA	New	2017	30,000	2.8
Russia	Syassky Pulp and Paper Mill	Leningrad	3	New	2016	40,000	4.2
South Africa	Correll Tissue	NA	1	Rebuild	2017	NA	2.46
South Africa	Hygienic Tissue Mill	Confidential	2	New	2016	28,000	2.7
South Africa	Confidential	Confidential	5	New	2016	27,000	2.7
South Africa	Twinsaver	Kliprivier	5	New	2017	31500.000	2.75
Saudi Arabia	Confidential	NA	1	New	2017	122tpd	2.8
Spain	ISMA2000 S.L	Barcelona	1	Rebuild	2016	33,250	2.76
Spain	Gomà-Camps	NA	NA	New	2018	35,000	2.8
Thailand	Wangpaper Co.	Bangkok	3	New	2017	17,300	2.5
Turkey	Aktül Kagit Üretim	Pamukova	NA	New	2016	60,000	5.6
Turkey	Hayat Kimya	NA	NA	New	2016	70,000	5.6
Turkey	Tezol	NA	1	Rebuild	2016	85tpd	2.8
USA	First Quality Tissue	Anderson	NA	New	2016	70,000	5.6
USA	Little Rapids	NA	3	Rebuild	201	NA	3.43
USA	Resolute	Calhoun	NA	New	2017	60,000	5.2.
USA	Sofidel America	Circleville	NA	New	2018	60,000	5.2.
USA	Sofidel America	Circleville	NA	New	2018	60,000	5.2.
USA	St Croix Tissue	NA	NA	New	2016	NA	5.6.
USA	St Croix Tissue	NA	NA	New	2016	NA	6
USA	ST Tissue	Franklin, Virginia	5	Rebuild	2018	45,500	6
USA	Von Drehle	Natchez	NA	New	2016	50,000	5.6
Vietnam	Bacgiang Import-Export	NA	1	New	2016	12.000.	2.8

Project Survey

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	PM SPEED (m/min)	SUPPLIER	COMMENTS
	1300	Kawanoe Zoki	BF15 SYD
	1000	Kawanoe Zoki	BF15 SYD
	1100	Kawanoe Zoki	BF12 SYD
	900	Kawanoe Zoki	BF12 SYD
	1100	Kawanoe Zoki	BF12 SYD
	2000	Andritz	PrimeLineCOMPACT VI (Shoe Press)
	1500	Recard	Crescent former
	2200	Valmet	Advantage DCT 100TS
	1700	Hergen	New complete paper machine EVO 12
	1600	Hergen	New complete paper machine EVO 12
	2000/1800	Valmet	Advantage NTT 200
	2000	Toscotec	AHEAD-2.0S
	2000	Toscotec	AHEAD-2.0S
	2000	Valmet	Advantage NTT 100
	1300	Toscotec	AHEAD-1.5M
	1000	Toscotec	MODULO Crescent Former Rebuild
	1500	Toscotec	MODULO-PLUS
	1600	PMP	Intelli-Tissue® 1600 Advanced
	2000	Toscotec	AHEAD-2.0S
	2200	Papcel	New line for hygienic paper with hydraulic headbox and Crescent Former
	1500	Toscotec	Dry End Major Rebuilding
	2000	Voith	NipcoFlex T shoe press, MasterJet T headbox, EvoDry T steel Yankee and the EcoHood T
	1200	PMP	Intelli-Tissue® 1200 EcoEc
	2200	Valmet	Advantage DCT 200TS with ViscoNip press
	2200	Valmet	Advantage DCT 200TS with ViscoNip press
	1600	Recard	Suction breast roll machine into crescent former
	2000	Valmet	Advantage Thru-Air
	1830	Voith	Except for the existing Yankee Dryer, which will be reused, all other machine's components will be new and based on machine model VTM 3
	2000	Valmet	Advantage NTT 200
	2000/1800	Valmet	Advantage NTT 200
	2000/1800	Valmet	Advantage NTT 200
	2000	Andritz	PrimeLineTM W8 (Steel Yankee)
	2000	Andritz	PrimeLineTM W8 (Steel Yankee)
	915	Toscotec	Dry-end rebuilding
	2000	Valmet	Advantage NTT 100
	770	Kawanoe Zoki	BF-10EX

111 Global tissue projects being added, ordered or in final planning stages

12 Brazilian tissue machine projects

35 China-based projects in this year's survey

4 South African tissue machine projects

CAUTION:
All aggregates taken from the survey should be treated with some caution. While all care has been taken to publish comprehensive data, it is inevitable that projects will be missing or details incomplete. Many projects have also been delayed so start-up data used in the 2015 Project Survey has had to be repeated. We welcome your help to ensure as comprehensive a survey as possible at the end of 2017.

Technical Theme: Paper Machine Quality, energy, fibre, water, costs... the search for high end advances

TWM/1 What new technical advances have you made in the last year concerning issues such as energy, fibre and water reduction, sheet quality and reliability?

Paolo Raffaelli, technical director, Toscotec: "The focus was on specific areas of the paper process identified through field experience and with actions driven by the energy cost increase trend worldwide. We did extensive work on multiple energy recovery by heat exchangers on hot air exhausts of Yankee hood and vacuum systems, from re-boilers for steam generation to process water heating. Fairly deep evaluation of the effects of raising up within certain limits process water temperature on overall drying energy consumption has led to proven results, with the possibility to have an automatic DCS control of the actual on time performance features. Closed water loop and fibre recovery by fractionation are also substantial achievements of the last year.

"Mechanical dewatering by means of TT NextPress, Toscotec Shoe Press technology for tissue, utilised in combination with TT SYD Steel Yankee operating up to 150 kN/m, has similarly shown high post press dryness levels with lower thermal energy demand of conventional suction press. At the same time the possibility to increase the bulk or to maintain it running a Shoe Press at nip loads varying from 70 to 150 kN/m results in proven fibre saving for specific paper grades given the same target parameters.

"Significant steps have also been taken around headbox design in terms of formation, operating consistency and paper quality. Sheet stabilisation, fully integrated with dust removal system and air flow control along the paper transfer from Yankee to the pope reel, result in higher stability and reliability of the dry end of tissue machine."

Martin Tietz, vice president, global product management tissue, Voith Paper: "The fastest-ever operating speed with a steam-heated hood, an impressive 2001 m/min, was achieved on a Voith tissue machine – TM16 at Cheng Loong in Taiwan. Steam-heated hoods are of great interest in areas where natural gas is not available or not economically feasible. Voith, as a real full-line supplier, provides the most advanced solutions within the new XcelLine – its latest generation of paper machines. We have an integrated approach to serve the whole plant life cycle."

Günter Offenbacher, director sales tissue and drying, Andritz: "Key areas have been energy saving solutions on conventional tissue machines, e.g., double dilution system within the approach flow system, widening the operational flexibility of the shoe press for even higher post press dryness and enhancing the product quality. Another area was to increase drying performance and reliability with steam heated hoods to save energy cost and reduce the maintenance efforts and higher pre-press dryness."

A **TWM** report

Maja Mejsner, director business development and marketing, PMP: "Last year has been very busy for us in both the tissue and paper sectors. We have been involved in projects on six continents. In tissue, we have extended our Intelli-Tissue® EcoEc line adding an Intelli-Tissue® EcoEc Premium type. It offers ultra-low steam consumption level. However, at the same time more advanced technological solutions including Intelli-Jet V® Premium hydraulic headbox, 16 foot Steel Yankee Dryer Intelli-YD®, a steam heated Intelli-Hood® and a large dia 1400 mm suction roll.

"It is an answer to more demanding consumers on emerging markets and an idea to be able to hit higher capacity numbers and sophisticated tissue quality.

We have been involved in projects on six continents. In tissue, we have extended our Intelli-Tissue® EcoEc line adding an Intelli-Tissue® EcoEc Premium type. It offers ultra-low steam consumption level.

"In addition, we have been very active in energy saving solutions provided by our Italian division PMPower Srl. One of the most interesting is a recovery steam generator system for a hood exhaust fumes as a key for spectacular energy savings. The first reference that works in France in Wepa's mill allows steam generation of 1.2 t/h and guarantees a high level of flexibility. The recovery system allows to save more than 25% of a stem flow by main generator to the machine and as a consequence fuel consumption is reduced as well."

Shinji Goda, director and general manager of engineering, Kawanoe Zoki: "The demand for higher value towel paper has been increasing in Asia.

We started-up the new type of headbox on towel paper machine, which can realise high basis weight, high productivity, and the improvement of the paper quality.

Its improvement on CD/MD ratio of our Best Former was a great achievement for us - we have never previously achieved this."

Ingmar Andersson, sales and IPR manager, Valmet Tissue Mills Business Unit: "Energy savings and fibre reduction continue to be the focus for R&D and project implementation. Concerning energy savings the most important is to reduce the water content remaining in the sheet after pressing and thus has to be evaporated away. High intense pressing such as the Advantage ViscoNip are nowadays installed in almost all new dry crepe tissue machines.

"Such new presses are making their way also into upgrades of existing tissue machines providing excellent dryness after press, in many cases close to 50%. The ViscoNip press is also flexible, changing operation from low load to high within minutes.

"The drying energy accounts for about 50% of the total energy. Such reduction of press dryness eliminates water in the sheet by up to 35%. The total energy saving when applying the ViscoNip press exceeds 15% compared to an ordinary Suction Pressure Roll.

"Also the application of Valmet's Advantage ReTurne energy recovery system, which recovers energy from the headbox jet stream, has now successfully been applied in several cases, offering a reduction of up to 100 kWh/tonne when applied to high speed tissue making.

"Fibre saving processes, sometimes referred to as Hybrid Processes, such as the Advantage NTT process continue to make way into the high end products and is successfully applied globally. This process is making high bulk products, without any increase in energy consumption compared to standard dry crepe production."

TWM/2 What technical areas will be your main focus in 2017?

Raffaelli: "We are investing on R&D with a continued effort on paper process analysis and verification of customers' requirements, always seeking innovation in conjunction with environmental sustainability. Main technical targets will be quality, savings on energy, fibre and water demand with consequent reduction of operating costs, also achievable through improved process design, with solutions such as a Shoe Press or the application of specific auxiliary systems as TT SAF in the approach flow system, or moving ahead with non-conventional technologies as structured tissue and reduced energy consuming TAD machines.

"Toscotec will also continue to invest in TT SYD technology: the new technological facility for large-diameter Steel Yankee Dryers represents a further step ahead in manufacturing and quality control capability. Conventional machines can run today with TT SYD diameters up to 22ft in combination with TT Milltech Hood, and overall energy consumption below 2 MWh/tpaper at high operating speeds.

"Winding technology is likewise a technical area of extensive engineering work by R&D in our company, as quality and runnability are also associated to the actual performances of this machinery. Concepts such as core centerwind assist and nominally zero nip winding pressure are today available as a standard option on Pope reel, for applications on conventional or non-conventional machines, and new technical concepts are also being implemented in tissue rewinders."

Andritz will introduce a revolutionary concept to the industry, with low additional investment cost on top of a conventional machine, with possibility to upgrade existing machines and with a big benefit.

Tietz: "Voith will continue to concentrate on machine efficiency. This includes reducing energy and fibre demand while also increasing productivity. In addition, we will also focus on solutions that improve paper quality."

Offenbacher: "Increasing quality demands and at the same time intensifying price pressure for the tissue maker will remain the challenge. Andritz will introduce a revolutionary concept to the industry, with low additional investment cost on top of a conventional machine, with possibility to upgrade existing machines and with a big benefit in both areas, quality improvement and less energy cost."

Mejsner: "As PMP we are a global player so we need to adjust our solutions to customers from both mature and emerging markets. However for both market segments of tissue industry our activities are engaged in the area of energy consumption optimization and final product quality improvement.

"We are extending our Intelli-YD® steel Yankee Dryer offer adding to standard sizes 12 and 15 feet also 16 and 18 feet size Yankee dryers. Together with solutions already offered by PMPower (high-efficient hoods, S&C systems etc) tissue makers are receiving great tools to save money every day. For our customers from emerging markets we propose an Optimum Cost Concept – an Integrated Tissue Mill (twin tissue lines, a common control room, no basement) that ensures production flexibility and significant investment cost squeeze.

"For mature markets we are planning to extent our offer by adding a tissue making line with a shoe press technology included Intelli-Tissue® Ultra. There are two reasons behind it. First of all as PMP we are one of the key players in shoe press technology in the paper sector (at present our solution Intelli-Nip® has been already appreciated by customers from four continents).

"In addition, this line is going to be equipped with Intelli-Jet V® Premium hydraulic headbox with an alternative diffusor shape. As PMP we are a market leader in headbox technology worldwide, however we constantly are looking for smart concepts in this field to stay ahead of our competitors. Secondly, we cannot ignore a need of experienced tissue makers who are interested to produce structure tissue as a smart alternative to more expensive TAD products."

Goda: "Further energy saving and an increase in productivity will understandably be our focus in 2017, however we think it is important to focus on the technology which will improve the working environment of our customers. We think our technologies such as dust removal and the automation of operation can hopefully change the impression to the paper manufacturing."

Andersson: "The Advantage NTT hybrid process offers totally new opportunities such the possibility to design the end product already in the tissue machine.

"Together with our customers and fellow suppliers we continue to develop this application in our Pilot Plant for tissue making. Today there are four NTT machines in operation and several more are coming on stream during 2017 so it is fully commercialised.

Further energy saving and an increase in productivity will be our focus in 2017, however we think it is important to focus on improving the working environment of our customers.

"Next year the Advantage ReTurne energy saving system will be applied also on our widest Advantage DCT 200 machines. A possibility that will offer significant savings in electricity consumption - to the machine category which today accounts for most of the tissue capacity expansion globally.

"Another important area is the development of Smart Tissue machines which is continuing with good progress."

Voith is very active in all regions. China will remain very important for the installation of new capacities. Tissue consumption in China is still growing and local producers are expanding their exports.

TWM/3 How are the world's changing trends and dynamics impacting your business and technical R&D? What geographical regions hold the most interest for you and why is this?

Raffaelli: "We are constantly looking at market needs worldwide, where our presence is progressively consolidating and becoming stronger, and we are investing in customer support and services.

"The continuous changes in clients' needs require flexibility and a smart approach, with a customer oriented spirit to face changes and requirements, but specific technical solutions and R&D activity are determined also by the geographical areas which have always to be considered in any business approach.

"The market in Asia is still characterized by conventional products even though new interest is growing for different technologies and premium tissue grades.

"In cases where the steam is the only heating medium available versus gas, specific solutions have been identified such as TT Prodergy to get high drying capacity and speed with reduced energy consumption and reliable machine operation; the use of 22FT Yankee size, hybrid or steam heated hoods, air or water automatic cleaning filters, are some of the design features applied.

"North America is a premium tissue market and TAD machines and products are quite well established, but there are opportunities for new conventional machines and technological rebuilds focused on process optimization and quality.

"We are also investing to support local customers in Latin America, while our presence in Europe has become definitely stronger in the last year."

Tietz: "As a global company, Voith is very active in all regions. China will remain very important for the installation of new capacities. Tissue consumption in China is still growing and local producers are expanding their exports, even to other continents. Other countries in Asia and in other continents are also in focus. Rebuilds are more frequent in Western Europe and North America."

Offenbacher: "Even with overcapacity reported in China, the market will stay of high interest due to its huge potential, that is still evident. North America and Europe will be our focus and also South America - Andritz stepped into this market recently with our delivery for a new Machine to Carta Fabril, including the world's biggest Steel Yankee. R&D work will be heavily intensified and will focus on all market areas, that is, from Premium technology to conventional machines and covering quality improvement, energy efficiency, fibre usage, synergies with other industries etc."

Mejsner: "We are consequently following our strategy which is strengthening our position in the market where we are well established (Asia, North America, Europe, Australia). We are also increasing our marketing efforts in new, promising areas like Latin America. Our philosophy is to keep a reasonable balance between markets.

"Each day we listen to our customers carefully. Emerging markets are more and more agile. They are ready to invest more and think long term. That is the reason why we have decided to extend our Intelli-Tissue® EcoEc line: there are two options now – a standard configuration EcoEc (essential solutions) and more advanced concept EcoEc Premium as mentioned above.

Our approach to the market is focused on a flexible client oriented design, and our permanent R&D activity is dedicated to the design of industrial plants.

"At the same time mature market need to focus more on cost optimization and alternative solutions. Our answer is above mentioned Intelli-Tissue® Ultra tissue making line (with a shoe press as key for success both for energy savings and better bulk – tissue quality).

"Moreover, we constantly provide sophisticated engineering projects for our long term corporate partners (details are confidential). These are focused on creating an added value to allow our partners to enter undiscovered market niches."

Goda: "We predict that the demand for household tissue shall increase in Southeast Asia. Our compact tissue machine shall be acceptable in this market at this moment. In addition to further cost savings and high operating efficiency, we would like to evolve the machine in order to meet the customer's requirement in this area."

Andersson: "Valmet is active on the global market and receives contracts from all major markets. There are variations in business volume depending on local conditions but fortunately when one market experience periodic drops another market continues to invest, therefore Valmet´s business has been fairly stable.

"There has been a slowdown in China but some of the bigger tissue makers continue to strengthen their market position and therefore still invest.

"The shutdown of capacity in China has helped limiting the impact from over capacity. It remains to be seen how the increased trade of tissue across the borders will impact the global tissue market."

TWM/4 What are the main technical challenges and opportunities facing your customers and how are you helping them?

Raffaelli: "Nowadays any technical solution in tissue industry is primarily determined by clients' needs. Our approach to the market is therefore focused on a flexible client oriented design, and our permanent R&D activity is dedicated to the design of industrial plants in a close combination with engineering study on actual process performances and our customer care feedback.

"We are also providing services such as field optimisation surveys on existing plants, overall project management and baby-sitting on new installations, post start up assistance.

"The areas where we are mostly technically supporting our customers are energy saving, optimization of plant efficiency, reduction of operational and maintenance costs, safety implementations and procedures, paper quality, fibre and water usage reduction.

"Emissions and environment impact control are also a critical design feature to be addressed in any project, external to the building for gas exhausts and noise, but also internal in the working areas for the operators, in terms of dust and mist containment, noise silencing."

Tietz: "The tissue market is expanding most quickly in regions where qualified personnel are scarce. Voith provides machines that are easy to operate and offers extensive training."

Offenbacher: "Increasing quality demands at intensifying price pressure will remain their major challenges. Andritz can provide not only the right technology and equipment - with the right value for money - but we can also support with our expertise in all areas, starting from fibre technology, e.g. use of annual fibre, up to product quality optimisation and service support to increase run time efficiency of machine/plant operation."

There are variations in business volume depending on local conditions but fortunately when one market experience periodic drops another market continues to invest.

Mejsner: "Tissue sector is stronger than ever and, at the same time compared to previous years, it is getting more mature, more conscious. Hygiene is an important element of life of every person all over the world. Of course there are different stages of development, preferences and drivers for consumers.

"Taking all those elements into account, I would indicate three main challenges: maintain expected tissue quality, optimization & control of production costs and, especially recently, flexibility. The last one has become a key for success.

Smart tissue makers are forced to look for solutions that bring flexibility of production (wide range of products) and quality diversification depends on end users preferences.

"Our scope of solutions for tissue makers is getting wider and wider based on the platform concept Intelli-Tissue® also including double width machines (5.5/5.6 m @ reel). A Crescent Former technology supported by sophisticated added-value solutions like multilayer type hydraulic headboxes, large steel YD, modern energy saving solutions (including a shoe press technology) are tools to stay flexible and achieve repeatable tissue quality."

Goda: "Our customers are seeking for high quality products in order to differentiate from other competitors. Complying with the market requirement as quick as possible is important strategy. We are trying to realise the customer's each demand on the machine with our high skills."

Andersson: "There are continuous efforts to improve the technology and at the same time limiting the total investment/ ton. It is also essential to increase the production output with high quality products.

"Besides this, the most important effort is to assist our customers to achieve highest possible efficiency at their plants. This is done in close cooperation, with our experts present at the mills but also by Remote Process Services and Industrial Internet. The Mill operations can be followed and analysed by our experts in our technology centres. Recommendations and discussions can place regularly or on demand without any time delay."

TWM/5 What trends in tissue machine will have the greatest impact on the production process in the next five years?

Raffaelli: "Efficiency, runnability, energy, reduced operation and maintenance costs, operator safety, environmental impact, should continue to be considered essential requirements for any new future rebuild or turn-key project and investment plan.

"The design of machinery and process will always be driven by the customer, but it will be different for mature or emerging markets, and each region will require different product performance or quality, with an expected general trend toward premium products, to be achieved in combination with reduced energy, fibre and water demand.

"We also believe that structured tissue technologies will continue to develop and grow, having however a market impact primarily on non-conventional technologies such as TAD systems.

"In any case, conventional tissue technologies, with Shoe Press, large diameter Steel Yankee and high efficiency hood, with recent achievements to get high quality final products, with their reduced energy consumption and investment cost in comparison with non-conventional technologies, are still offering a demonstrated and up to date solution with capability for premium tissue grades."

Tietz: "The tissue market is increasingly demanding different qualities and unique products. But the tissue producers expect that they do not need individualized machines for each grade. Instead, the variations between the many different machines a customer operates should be as small as possible. Therefore, machines will become less complex for operating personnel and maintenance."

Offenbacher: "The tissue industry is facing increasing pressure to comply with statutory requirements, and to reduce resource consumption.

"Based on these requirements, we offer a mill wide resource management system (RMS) that enables the monitoring, tracking and tracing of the tissue machine's esource demands and energy flows. On the one hand, the resource demand and energy consumption have a direct impact on competitiveness and costs, on the other they are in direct interaction with the production itself. Optimisation is therefore only possible when all processes are analyzed and monitored in a transparent way."

Mejsner: "Tissue sector is the strongest one in the Pulp and Paper industry. Forecasts are optimistic – a dynamic growth is a fact. If there is no unexpected crisis, a development should continue smoothly. Innovation starts to play a more important role as people have started to think long term estimating their business opportunities. In my option three areas will drive this growth: energy savings solutions, tissue quality improvement and safety projects.

"Energy savings solutions will be directly connected with application of large Steel Yankee Dryers (even 18 and 20 feet), efficient auxiliary systems (steam and condensate systems, vacuum systems, hoods etc) as well as a shoe press.

"Tissue quality improvement will directly correlate with high tech hydraulic headboxes (multilayer type), large dia suction press rolls and/or shoe press technology.

"Safety projects will be connected with more demanding regulations and bigger care of employees."

Goda: "The market is requiring product differentiation. The features of each machine are also differentiated. Our towel paper machine already accepted in Japan is expected to be chosen in Southeast Asia, regarded as the machine which can create the high-value paper differentiated from competitors."

Andersson: "Lately energy prices globally have been quite moderate but prices will likely increase again.

"Consumers will over time request products with less impact on the environment therefore energy, fibre and water will continue to be very important.

"The tissue making process is quite complicated and requires relatively large investments. Therefore the time to react on changes are long, considering the total industry sector.

"Investments made today are expected to be in service for a long time. Tissue makers driven by a clear strategy, facing these challenges, will be rewarded over time. Today there are some tissue makers guided by a clear vision and continuously applying the Best Available Technology."

2016 North American tissue statistics point to a balanced market

Shipments and operating rates are currently strong but we worry about the supply side

So the demand side of the North American tissue market appears strong, but we continue to worry about the line-up of additions to the supply side. That said, our supply-demand (s-d) model has looked similar over the last three years with our forecast of lower future operating rates and expectation of pricing pressure. This hasn't happened as the start-up timeline of the new tissue machine additions were delayed and we failed to accurately predict closures.

The delay on new machine starts is not unusual as a reasonable order file is required before companies commit the estimated $300MM for a new machine. Predicting boiler explosions (Lincoln Paper and Tissue) and optimising strategies (Clearwater) does not seem to be our core competency! Our updated s-d model on the following page shows a declining operating rate (production-to-capacity) from 93.4% in 2016 to 91.7% in 2019. Declining operating rates are never a great thing as they suggest lower tissue pricing.

We could see a repeat of the recent past, with delayed new capacity additions and machine closures balancing out. We could also see the entry of European discount supermarket chains, like Lidl and Aldi, as disruptive to the current brand focused North American consumer, allowing for the expansion of private label (where the majority of the capacity adds reside). The future is uncertain to us.

Converted product shipments 2.6% higher y/y (+2.0% 10mo YTD)

Total At-Home (consumer) shipments of converted tissue products increased 1.9% y/y and 1.6% 10mo YTD. This strength was attributable to higher volumes in toilet paper (up 1.7% y/y, +1.4% YTD), towel (+2.5% y/y, +2.0% YTD), and facial (+3.0% y/y, +2.2% YTD). Total Away-from-Home (AfH) shipments of converted tissue products also showed strength, rising 4.1% y/y (+2.8% YTD). For AfH, toilet paper volumes grew 4.8% y/y (+2.9% YTD), towels increased 3.7% y/y (+2.9% YTD), and napkin volumes climbed 2.4% y/y (+2.1% YTD).

Paul Quinn

Markets analyst, RBC Capital

Parent roll production up 5.7% y/y (+2.0% 10mo YTD)

Parent roll production was 745K tonnes

Start-up/closure		Company	City, State/Province	Country	Conventional / TAD	Nameplate capacity (000 tpy)
Qtr	Yr					
Q1	2016	von Drehle Corp	Natchez, MS	USA	NTT	35
Q2	2016	First Quality	Anderson, SC	USA	TAD	70
Q1	2016	St. Croix Tissue (APP)	Baileyville, ME	USA	CONV	66
Q3	2016	St. Croix Tissue (APP)	Baileyville, ME	USA	CONV	66
Q4	2016	Clearwater Paper	Neenah, WI	USA	CONV	(32.0)
						205
Q1	2017	Resolute FP	Calhoun, TN	USA	NTT	66
Q1	2017	Orchids	Barnwell, SC	USA	NTT	35
Q3	2017	Kruger	Crabtree, QC	Canada	CONV	22
Q3	2017	Little Rapids Corp	Shawano, WI	USA	CONV	11
H2	2017	RBCe private label	Northeast	USA	TAD	70
						204
Q1	2018	Sofidel	Circleville, OH	USA	NTT	77
Q2	2018	ST Tissue	Franklin, VA	USA	C	50
Q3	2018	First Quality	Anderson, SC	USA	TAD	75
Q3	2018	Sofidel	Circleville, OH	USA	NTT	77
						279
Q2	2019	First Quality	Lock Haven, PA	USA	TAD	70
TBA	2019	Resolute FP	Catabwa, SC	USA	NTT	66
						136

***Exhibit 1:** North American Tissue Capacity Changes*
***Source:** RISI, RBC Capital Markets*

000 tonnes	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016E	2017E	2018E	2019E
Canada demand	718	740	757	801	806	782	791	804	788	838	855	869	885	901	917	933
US demand	7,898	7,844	7,896	8,034	8,203	8,053	8,231	8,322	8,471	8,548	8,670	8,862	9,022	9,184	9,349	9,517
NA demand	8,616	8,584	8,653	8,835	9,009	8,835	9,022	9,126	9,259	9,386	9,525	9,731	9,906	10,084	10,266	10,451
Incremental annual NA demand	222	-32	69	182	174	-174	187	104	133	127	139	206	175	178	182	185
Canada demand growth rate	1.4%	3.1%	2.4%	5.8%	0.6%	-3.0%	1.3%	1.5%	-1.9%	6.3%	2.1%	1.6%	1.8%	1.8%	1.8%	1.8%
US demand growth rate	2.8%	-0.7%	0.7%	1.7%	2.1%	-1.8%	2.2%	1.1%	1.8%	0.9%	1.4%	2.2%	1.8%	1.8%	1.8%	1.8%
NA demand growth rate	2.6%	-0.4%	0.8%	2.1%	2.0%	-1.9%	2.1%	1.1%	1.5%	1.4%	1.5%	2.2%	1.8%	1.8%	1.8%	1.8%
Net Canada imports (exports)	-96	-62	-62	-14	-19	-30	-11	-7	-2	54	56	55	40	20	20	20
Net US imports (exports)	197	215	160	153	183	235	283	265	276	252	285	348	388	388	388	388
Net NA imports (exports)	101	153	98	139	164	205	272	258	273	306	341	403	428	408	408	408
Canada production	814	801	819	816	825	811	802	810	790	784	799	814	845	881	897	913
US production	7,701	7,629	7,736	7,880	8,020	7,819	7,948	8,058	8,196	8,296	8,385	8,514	8,634	8,796	8,962	9,130
NA production	8,514	8,430	8,555	8,696	8,845	8,630	8,750	8,868	8,986	9,080	9,184	9,328	9,479	9,677	9,858	10,043
Canada capacity	865	865	879	880	880	872	874	875	863	848	869	875	879	895	910	915
US capacity	8,174	8,212	8,143	8,251	8,461	8,481	8,537	8,581	8,556	8,782	8,900	9,077	9,268	9,508	9,786	10,043
NA capacity	9,039	9,078	9,021	9,130	9,341	9,353	9,411	9,456	9,419	9,630	9,769	9,952	10,148	10,403	10,697	10,958
Incremental annual NA capacity	260	39	-56	109	211	12	58	45	-37	211	139	183	196	255	294	261
NA creep													0.5%	0.5%	0.5%	0.5%
Canada capacity growth rate	4.5%	0.0%	1.5%	0.1%	0.0%	-0.9%	0.3%	0.1%	-1.4%	-1.8%	2.5%	0.7%	0.5%	1.8%	1.7%	0.5%
US capacity growth rate	2.8%	0.5%	-0.8%	1.3%	2.6%	0.2%	0.7%	0.5%	-0.3%	2.6%	1.3%	2.0%	2.1%	2.6%	2.9%	2.6%
NA capacity growth rate	3.0%	0.4%	-0.6%	1.2%	2.3%	0.1%	0.6%	0.5%	-0.4%	2.2%	1.4%	1.9%	2.0%	2.5%	2.8%	2.4%
Canada op. rate (prod-to-cap)	94.0%	92.6%	93.2%	92.7%	93.7%	93.0%	91.8%	92.6%	91.6%	92.5%	92.0%	93.0%	96.1%	98.4%	98.5%	99.8%
US op. rate (prod-to-cap)	94.2%	92.9%	95.0%	95.5%	94.8%	92.2%	93.1%	93.9%	95.8%	94.5%	94.2%	93.8%	93.2%	92.5%	91.6%	90.9%
NA op. rate (prod-to-cap)	94.2%	92.9%	94.8%	95.2%	94.7%	92.3%	93.0%	93.8%	95.4%	94.3%	94.0%	93.7%	93.4%	93.0%	92.2%	91.7%
NA op. rate (demand-to-cap)	95.3%	94.6%	95.9%	96.8%	96.4%	94.5%	95.9%	96.5%	98.3%	97.5%	97.5%	97.8%	97.6%	96.9%	96.0%	95.4%
Canada net new capacity				0	0	0	0	0	-40	35	0	0	0	22	0	0
US net new capacity				175	-8	80	100	38	111	136	68	87	205	182	279	136

Exhibit 2: *RBC NA Tissue Supply-Demand Model*
Source: *RISI, RBC Capital Markets*

in October, up 5.7% y/y (flat m/m). Domestic parent roll consumption was 770K tons, up 6.4% y/y (+3.2% YTD) and flat m/m.

Operating rates in line with the 10-year October average

Operating rates edged lower m/m to 93.5% from 96.6% in September (91.1% last year). This is largely in line with the 10-year October average of 93.3%. Monthly capacity was up 3.0% y/y (+3.4% m/m, 2.8% YTD).

Net US tissue imports jumped 54.8% y/y (though represent only ~5% of consumption)

Net US tissue imports increased 54.8% y/y (+45.3% YTD) in September (latest customs data). US exports of converted tissue products were up 2.6% y/y in September, while Canadian volumes increased 3.3% y/y.

Parent roll prices lower m/m for virgin and recycled grades

High-quality virgin parent rolls showed slight weakness in October at $1,377/ton, down 0.6% from September (+2.4% y/y). Recycled parent roll prices declined slightly, with the high-quality grade at $1,126/tonne, down 0.8% m/m (+1.0% y/y).

New price increases

In converting tissue products, AfH producers announced new price increases. Increases range from 3% to 8% and will take effect between Nov 1, 2016 and Jan 1, 2017 depending on the company. According to RISI, the ranges include 3% to 5% (Solaris Paper), 8% (K-C), 5% (SCA), and 6% (Cascades).

Three new TAD tissue PMs announced and some year-end closures

Irving Consumer Products announced the purchase of a new TAD tissue-making machine from Valmet with an expected delivery in 2018 (RISI estimates capacity to be about 70K ST/year). First Quality Tissue also announced two new TAD machines as a part of their expansion initiatives. One machine will be constructed in Anderson,

South Carolina and is expected to begin production in the second half of 2018 while the other will be in Lock Haven, Pennsylvania and is projected to start in the first half of 2019. These two machines will add ~145K tonnes of production capacity.

These announcements were partially offset by Clearwater Paper's announced closure of its Oklahoma City converting facility and two tissue machines in Neenah, Wisconsin, which removes 32K tonnes of production capacity beginning 31 December 2016.

Event	Date	Location	Website
CIDPEX 2017	March 22 – 24, 2017	Hubei, China	www.cnhpia.org/en/shyz
Tissue World Milan	April 10 – 12, 2017	Milan, Italy	www.tissueworld.com/Milan
2017 PaperCon	April 22, 2017	Minneapolis, USA	www.tappi.org/events/event-calendar/2017-papercon
ISSA/INTERCLEAN CEE	April 26 – 28, 2017	Warsaw, Poland	www.issainterclean.com
Label Summit Latin America 2017	May 16-17, 2017	Santiago, Chile	www.labelsummit.com/chile/
Tissue World São Paulo	May 31 – June 2, 2017	São Paulo, Brazil	www.tissueworld.com/SaoPaulo
ISSA/INTERCLEAN North America	September 11-14, 2017	Las Vegas, USA	www.issainterclean.com/northamerica/
Labelexpo Europe 2017	September 25 – 28, 2017	Brussels, Belgium	www.labelexpo-europe.com
ISSA/INTERCLEAN ISTANBUL	October 18 – 20, 2017	Istanbul, Turkey	www.issainterclean.com
Labelexpo Asia 2017	December 5-8, 2017	Shanghai, China	www.labelexpo-asia.com/welcome-labelexpo-asia-2017
Tissue World Miami	March 21 – 23, 2018	Florida, USA	www.tissueworld.com/miami
ISSA/INTERCLEAN Amsterdam	May 15 – 18, 2018	Amsterdam, Netherlands	www.issainterclean.com/en/amsterdam
Asian Paper 2018	June 6 – 8, 2018	Bangkok, Thailand	www.bangkok.asianpapershow.com
Tissue World Istanbul	September 4 – 6, 2018	Istanbul, Turkey	www.tissueworld.com/istanbul
Labelexpo Americas 2018	September 25-27, 2018	Chicago, USA	www.labelexpo-americas.com/welcome-labelexpo-america

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What is your company's primary field of business (tick all that apply):

A. INTEGRATED TISSUE PRODUCTS MAKER

Primary business making paper and producing:

☐ Consumer (At Home) Finished products
☐ Away-from-Home (AFH) Finished products
☐ Other Tissue Grades, please specify: ....

C. TISSUE CONVERTER

Primary business is converting jumbos and producing:

☐ Consumer Finished products
☐ Away from Home (AFH) Finished products
☐ Other Tissue Grades, please specify: ....

B. JUMBO ROLL SUPPLIER

☐ Jumbo Roll Maker, for sale to converters

D. RETAILING AND DISTRIBUTION

☐ Retailer
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E. SUPPLIER TO THE TISSUE INDUSTRY Please check all that apply:

☐ Paper making machinery
☐ Fabrics, felts, clothing
☐ Drying technologies
☐ Process automation and control
☐ Water treatment, environmental and effluent control
☐ Dust control and air treatment systems
☐ Doctors and creping blades

☐ Deinking
☐ Stock preparation, fiber processing and pulping equipment
☐ Fibers: Market pulp and recycled fiber
☐ Chemicals and chemical technologies

☐ Converting machinery and supplies
☐ Printing machinery and supplies
☐ Inks, glues and dyes
☐ Embossing rolls

☐ Knives and blades
☐ Folders/interfolders
☐ Cores and coreboard
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