

Biofore

UPM'S STAKEHOLDER MAGAZINE 1/2016

Staying
healthy
with
WASH

**BOOSTING
EUROPE'S
BIOECONOMY**

**OUT WITH FOSSIL
MATERIALS,
IN WITH RENEWABLE
ALTERNATIVES**



Sector leader position in Dow Jones Sustainability Index.
Top scores in the CDP Climate indices and CDP Forests Program.
Winner of the EU Sustainable Energy Europe Awards 2014.
And the list goes on.

We think ahead

Biofore delivers real win-win-win solutions!

For us, profitable business and responsibility are completely interrelated. UPM's Biofore strategy is built on innovative and responsible operations. This has been highly recognised several times in the past years.

Taking responsibility seriously makes only winners; customers, us, environment and society.

We think ahead, we live off innovative renewables and that's what makes us different. UPM – the Biofore Company.

Join the conversation [#UPM](#)

www.upm.com

**MORE WITH
BIOFORE**

UPM leads the integration of bio and forest industries into a sustainable future. Biofore stands for innovation, responsibility and efficiency. www.upm.com

MEMBER OF
**Dow Jones
Sustainability Indices**
In Collaboration with RobecoSAM

 **ROBECOSAM**
Sustainability Award
Gold Class 2014

 **CDP**
CLIMATE
DISCLOSURE
LEADER 2015

 Sustainable
Energy Europe Awards
2014





BIOFORE IS UPM'S
GLOBAL STAKEHOLDER
MAGAZINE



UPM – The Biofore Company

UPM leads the integration of bio and forest industries into a new, sustainable and innovation-driven future.

Our company consists of six business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Paper Asia, UPM Paper ENA (Europe & North America) and UPM Plywood.

Our products are made of responsibly sourced, renewable raw materials. They offer alternatives to replace non-renewable fossil-based materials.

We develop new innovative and sustainable businesses. Biofuels, biocomposites and biochemicals are based on our extensive know-how and strong position in the forest biomass sourcing and processing value chain.

We live by our values – trust and be trusted, achieve together, renew with courage.

Inspired by innovation and collaboration

One of the world's biggest startup events, Slush, took place in Helsinki in November, bringing together 15,000 attendees from around the globe; startups, investors and journalists. Slush reflects innovation, collaboration and ambition at its best – themes that also inspired this issue of our Biofore magazine.

Events like Slush are a good reminder for us to stop and think where we stand in respect of new ideas, technologies and materials. Sustainable development was strongly presented at Slush this year, focusing on themes related to bio-based materials and the circular economy. UPM presented visions for sustainable growth and new partnership opportunities to a packed audience crowded around the Green Stage. You can read more about our experience at Slush in this issue on pages 20–21.

Innovation at UPM is a two-sided matter. On the one hand, it is the research and development work done through our own investments. On the other hand, it is development done through collaboration. Collaboration and innovation opportunities exist in several business areas for our partners and one concrete example is within utilisation of patents and technologies that are not in our core businesses.

As an example of our innovation and sustainability work, this issue takes you to the Changshu mill in China and to the new paper machine project that broadens our product portfolio to support customers in the Asia-Pacific region.

As Jyrki Ovaska, Executive Vice President, Technology, states, the most significant new innovations are born by breaking the boundaries of traditional industry (p 15).

I was inspired by the determination, boldness and curiosity of the young startup entrepreneurs at Slush and hope this issue inspires you to see the possibilities of cooperation and innovative thinking.

Wishing our readers a year filled with fruitful collaboration and inspiration.

Elisa Nilsson

Vice President,
Brand and Communications, UPM



SUBSCRIBE TO OUR PRESS
RELEASES AT
www.upm.com/media



TWITTER
[@UPM_News](https://twitter.com/UPM_News),
[www.twitter.com/
UPM_News](http://www.twitter.com/UPM_News)



LINKEDIN
[www.linkedin.com/
company/
UPM-Kymmene](http://www.linkedin.com/company/UPM-Kymmene)



YOUTUBE
[www.youtube.com/
upmdotcom](http://www.youtube.com/upmdotcom)



FACEBOOK
[www.facebook.com/
UPMGlobal](http://www.facebook.com/UPMGlobal)

An aerial night photograph of a city, showing a dense network of roads and buildings illuminated by streetlights and building lights. The lights create a complex, glowing pattern against the dark background of the city.

Towards the next industrial revolution

The bio-based economy will play a key role in replacing fossil fuels and raw materials on a large scale. Innovative bio-based industries will contribute to raising the share of industry in GDP and to creating a circular, resource-efficient economy. Replacing fossil raw materials with biological resources is an indispensable component of a forward-looking climate change policy.



03 EDITORIAL

04 TOWARDS THE NEXT INDUSTRIAL REVOLUTION

06 CONTENTS

08 IN TIME

10 BOOSTING EUROPE'S BIOECONOMY

As the next big wave of global economic development, the bioeconomy poses a positive challenge to our fossil fuel dependence.

14 UNITED ON THE BIO-FRONT

Finland is returning to its traditional source of wealth. Well over half of the nation's sustainable innovations come from forests.

15 OUT WITH FOSSIL MATERIALS, IN WITH RENEWABLE ALTERNATIVES

UPM promotes new bio-projects both through its own investments and international collaboration.

17 INNOVATING A SUSTAINABLE FUTURE

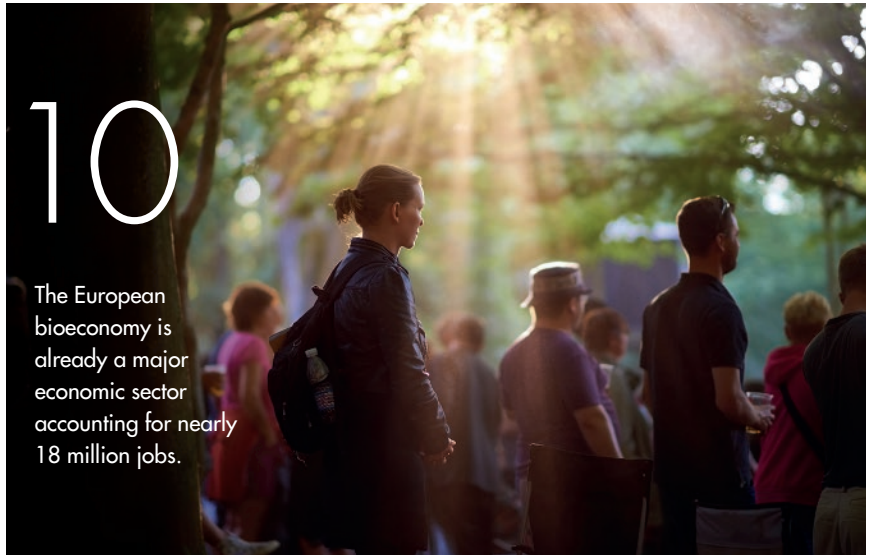
Pioneering R&D places UPM at the forefront of the bioeconomic breakthrough.

18 CLEANER CITY TRAFFIC WITH WOOD-BASED DIESEL

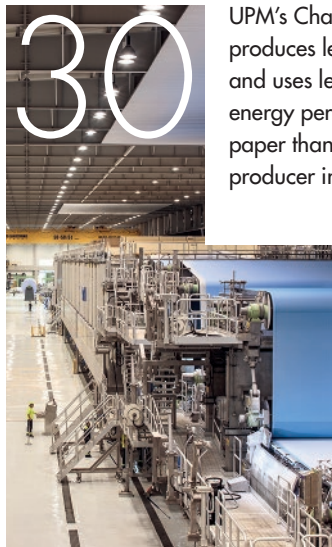
UPM teams up with experts to conduct field tests of its wood-based diesel fuel in Helsinki city buses.

20 SLUSH DRIVES GREEN GROWTH

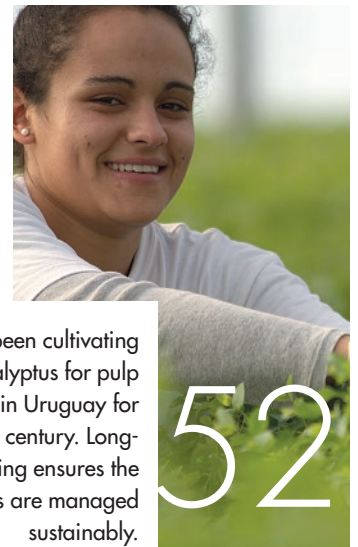
The spotlight was green at this year's Slush, one of the world's key business events dedicated to growth and technology.



The European bioeconomy is already a major economic sector accounting for nearly 18 million jobs.



UPM's Changshu mill produces less waste and uses less water and energy per tonne of paper than any other producer in China.



UPM has been cultivating eucalyptus for pulp production in Uruguay for a quarter century. Long-term monitoring ensures the plantations are managed sustainably.



The Paris Climate Convention sends a strong message to the business community, says Finnish Minister Kimmo Tiilikainen.

22 THE PARIS CLIMATE CONVENTION

The world held its breath as 196 countries gathered in Paris for the 21st UN Framework Convention on Climate Change in December 2015.

26 CALL FOR TRANSPARENCY IN INTERNATIONAL CLIMATE POLICY

Transparency and comparability should be key tools in the evaluation of climate policy actions, says Finnish researcher Antto Vihma.

28 BIOECONOMY MITIGATING CLIMATE CHANGE

Sustainable forestry and bioeconomic innovation are the wisest ways to cut greenhouse gas emissions, states the Forest Solutions Group (FSG).

30 A CHINESE PROJECT WITH A FINNISH TWIST

UPM completes its new paper machine project at the Changshu mill in China with an enviable safety record.

33 GROWING TOGETHER WITH OUR CUSTOMERS

The new Changshu paper machine will broaden UPM's portfolio and support its Asia-Pacific customers.

35 ONE OF THE WORLD'S BEST PAPER MILLS

The UPM Changshu mill raises the bar in efficiency, technology, safety and environmental performance.

36 A FRONT-RUNNER IN SUSTAINABILITY

UPM China leads a wide range of initiatives promoting environmental causes.

38 NEW CHANGSHU INVESTMENT BOOSTS GROWTH OPPORTUNITIES

The new coating line in Changshu helps UPM Raflatrac meet growing demand in Asia-Pacific.

40 NEWBURY TAKES PRINT TO THE NEXT LEVEL

The UK newspaper's award-winning augmented reality solution makes images literally leap off the page.

42 MAKERS OF BESTSELLERS

Paper that makes a book look and feel good plays a big part in creating a powerful reading experience.

44 STAYING HEALTHY WITH WASH

The WASH programme builds healthier work environments by promoting safe drinking water and proper sanitation.

46 A PULP MILL IS REBORN

We take a tour of the revamped Kymi pulp mill to see what's bigger and better after a EUR 160 million investment.

50 PAPER SAYS IT ALL FOR RTV MEDIA

The German publisher trusts in paper to create a positive emotive experience and send the right signals to its readers.

52 FORESTRY FINDS FERTILE SOIL IN URUGUAY

UPM has been cultivating eucalyptus for pulp production in Uruguay for a quarter century. Long-term monitoring ensures the plantations are managed sustainably.

54 SYNERGY WITH CATTLE FARMERS

The Uruguay forest industry is expanding its planted areas in symbiosis with traditional cattle farmers, who welcome gum plantations as a supplementary source of income.

MORE WITH BIOFORE



UPM leads the integration of bio and forest industries into a sustainable future characterised by innovation, responsibility and resource efficiency. www.upm.com

EDITOR-IN-CHIEF

Elisa Nilsson

EDITORIAL STAFF

Heli Aalto, Annukka Angeria, Sari Hörkkö, Terhi Jokinen, Klaus Kohler, Monica Krabbe, Anneli Kunnas, Marjut Meronen, Pia Nilsson, Marika Nygård, Sini Paloheimo, Juha Pitkäranta, Mari Ruissalo, Annika Saari, Päivi Salpakivi-Salomaa, Jaana Simonaho, Reetta Södervik, Päivi Vistala-Palonen, Vivian Wang, Antti Ylitalo.

DESIGN

Valve

PRINTING

Erweko Oy

COVER

UPM Finesse Silk 200g/m²

PAGES

UPM Finesse Silk 130 g/m²

UPM-KYMMENE CORPORATION

PO Box 380

FI-00101 Helsinki

Finland

Tel. +358 (0)204 15 111

www.upm.com

www.upmbiofore.com



UPM

The Biofore
Company

UPM's Chudovo plywood mill turns 25

UPM's Chudovo Plywood Mill celebrated its 25th anniversary on Sunday, 1 November 2015. The mill has been the pioneer of the modern plywood industry in Russia and continues to set the benchmark for the local plywood industry.

"UPM Chudovo is one of our top-performing mills in UPM Plywood. Continuous development, quality improvement and motivated employees are the keys of its success," says **Mika Sillanpää**, Executive Vice President, UPM Plywood.

You can now read
Biofore Magazine and
interesting articles in our
new digital publication at
www.upmbiofore.com.

UPM expands Otepää plywood mill

UPM is set to strengthen its position as the leading plywood manufacturer in Europe by expanding the Otepää plywood mill in Estonia.

"New competitive production capacity will improve our capability to respond to growing demand and to serve our key customer industries more reliably and effectively. Our goal is to secure our favourable profitability development", says **Mika Sillanpää**, Executive Vice President of UPM Plywood.

The expansion will bring the mill's production to almost double at 90,000 m³ per annum. In addition to the mill's expansion, the site will also host a new bio power plant, which will replace the old, partly oil-burning plant.

The investments made in Otepää total about EUR 40 million. Around 40 new employees will join the personnel at the expanded plant.

External recognition for responsibility from Dow Jones

UPM has been listed as the industry leader in the Dow Jones European and World Sustainability Indices (DJSI) for 2015–2016. The listing comes as recognition for excellent environmental performance, responsible sourcing practices and strict corporate governance, but is also a sign of successful communications and engagement with stakeholders.

"We actively share our activities with our stakeholders and their impacts on the environment, people and the economy, which has been positively noted," says **Pirkko Harrela**, Executive Vice President, Stakeholder Relations.

The DJSI follows a best-in-class approach, recognising companies across all industries that outperform their peers in sustainability metrics. UPM is listed in the indices for the fourth year in a row.



MEMBER OF
**Dow Jones
Sustainability Indices**
In Collaboration with RobecoSAM

UPM celebrates one hundred years of stock exchange listing

UPM's journey on the stock market started one hundred years ago. The listing is a significant example of Finnish industrialisation and economic growth during a time when the First World War created a boom in Finnish industry. UPM's share is one of the most traded shares in the Helsinki Stock Exchange.

"Investors are always interested in how the company is creating value now and in the future. We create sustainable solutions and many of them replace non-renewable materials. We focus on growing and renewing our businesses and developing new products," says **Mika Mikkola**, Vice President, Investor Relations.

UPM's predecessor companies Aktiebolaget Walkiakoski and Kymmene Ab were listed on the Helsinki Stock Exchange in August–September 1915.



Top position on the CDP Nordic Disclosure Leadership Index

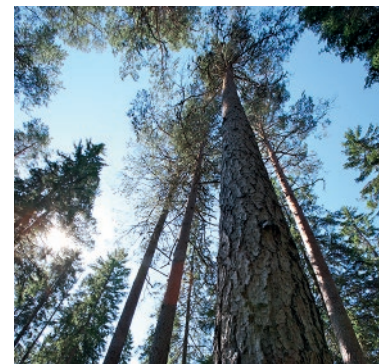


UPM has achieved a top position on the Nordic Disclosure Leadership Index (CDLI) for the high quality of its climate change-related information.

The position indicates a high level of transparency

in the disclosure of the company's climate change-related information, such as data regarding carbon emissions and the use of energy.

"UPM's Biofore strategy responds clearly to the global challenges regarding climate change," says **Päivi Salpakivi-Salomaa**, VP, Environment and Responsibility, UPM. UPM's score was 99 out of 100. This is already the 7th time in a row that UPM has been listed on the CDLI.



Over 100,000 hectares under UPM's FSC® group certificate in Finland

UPM's Forest Stewardship Council FSC® group certification scheme for private forest owners in Finland has passed a milestone of 100,000 hectares of certified forest.

"UPM promotes the advancement of FSC forest certification in Finland.


FSC certified wood creates new opportunities for our businesses in highly competitive end-use markets.

We are looking to increase the use of FSC certified fibre in our operations," says **Eija Kuusisto**, Key Account Manager at UPM Wood Sourcing and Forestry.

UPM's FSC group certificate provides private forest owners with a reliable and internationally recognised means of ensuring that their forests are managed responsibly and according to the latest practices. The FSC certificate is mainly targeted at large and medium-sized forest estates.

Boosting Europe's bioeconomy

The bioeconomy promises to lead the next rising wave of global economic development. Renewable energy, renewable raw materials and recyclable products pose a positive challenge to our current fossil fuel dependence.



Population growth together with rising incomes are speeding up consumption and demand for food, feed, fuel and other materials globally. United Nations predicts that food production must be doubled to meet demand from the world's growing population, which is projected to reach 9.7 billion by 2050.

“Within the coming decades we will be facing enormous and unprecedented challenges that will result in environmental, social, political and economic changes across the world,” predicts **John Bell**, Director of the Bioeconomy Directorate in the European Commission's Directorate-General for Research and Innovation.

Bell points out that land availability and soil conservation together with the effects of climate change will limit agricultural production. Meanwhile, other biomass resources like marine and forestry biomass, but in particular waste, are still underexploited.

“We need more research and technology development to harness this biomass potential in a sustainable manner. Innovation is what will turn today's bio-waste into tomorrow's products. This will make the bioeconomy the green engine of a wider circular economy where all stocks have value at every stage of their life cycle.”

>>



John Bell

“The bio-based economy is going to play a key role in replacing fossil fuels on a large scale, but this is not just about energy. We are also seeing new emerging sectors, such as biomaterials and green chemistry.”

– John Bell.

The next industrial revolution

Europe is on a mission to lead the bio-economic revolution. The European bioeconomy is already a major economic sector accounting for nearly 18 million jobs in various well-established bio-based industries ranging from agriculture to forest-based industries.

“The bio-based economy is going to play a key role in replacing fossil fuels on a large scale, but this is not just about energy. We are also seeing new emerging sectors, such as biomaterials and green chemistry,” Bell says.

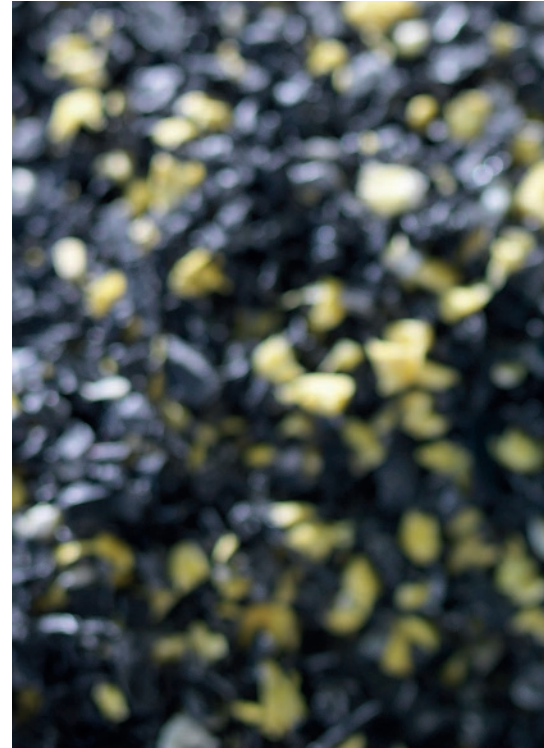
Accelerating development will offer important opportunities for innovation, jobs and growth, helping Europe to ‘reindustrialise’. This task requires expanding political awareness of the need for a coherent framework to promote investment in the bioeconomy globally.

An increasing number of EU Member States are creating their own bioeconomy strategies. “More than ever we need new sources of growth in Europe. We can benefit economically and environmentally from making better use of our biological resources. Our industry needs to fully exploit the business opportunities that will be created in the transition to a sustainable economy.

“There are talented and visionary people taking advantage of these opportunities all over Europe. The change is happening at a national level but also many EU regions are focused on launching their bioeconomy strategies.”

Bio-breakthroughs big and small

Europe holds the biggest share in the total number of industrial biotechnology patent applications filed since 2000. Although Europe leads the field in innovation, it has not succeeded in commercialising its technologies as well as international competitors such as the US, Brazil, China and South East Asia.



Bell concedes that the EU market remains fragmented and is not innovation-friendly enough. A large number of Europe’s best researchers and innovators are moving to other continents in search of more favourable conditions.

One of the disadvantages faced by Europe is that land and energy costs are lower and political support and incentives are higher in its peer countries. Europe is spending 0.8% of GDP less than the US and 1.5% less than Japan every year on Research & Development (R&D).

“Our challenges are interconnected and require effective action in many sectors. To unlock our potential we need to increase research and encourage more innovations in new technologies”, emphasises Bell.

“We are putting much effort into further developing bio-based products like bio-plastics, bio-chemistry as well as bio-based materials, which



are very promising fields. We are also supporting new demonstration and flagship biorefineries and enabling bio-based products to reach the marketplace,” says Bell.

“In particular we have to boost breakthrough technologies by small and innovative companies,” he adds.

As an example Bell names a small Finnish company that recently won a national biorefinery contest with a new technology producing yarn from cellulose made from wood residues.

“Such a ‘treeshirt’ is likely to have a much lower footprint than current products made from cotton or plastic. This shows that breakthrough technologies can emerge even from classical sectors, such as forestry.”

Where’s the money going?

In 2012, the European Commission launched its bioeconomy strategy to promote innovation and sustainable growth in Europe. The strategy aims

to increase the sustainable use and production of renewable biological resources including bio-waste.

“Since then, we have made progress both at EU and national levels. The strategy focuses on boosting investments and developing new value chains and markets in the coming years.”

One example is the EU’s new Horizon 2020 framework programme for research and innovation, which pledges close to EUR 4 billion in support to bioeconomic research and innovation for the 2014–2020 period.

On the R&D side, the EU has created the Bio-based Industries Joint Undertaking, which is a new EUR 3.7 billion Public-Private Partnership between the EU and the Bio-based Industries Consortium. The target is to develop new bio-based products and markets based on smart and efficient use of resources, including waste.

“This initiative is financing major demonstration and flagship projects in Europe to create new bio-based products from biomass coming from various waste streams. This will lead to more environmentally friendly growth by reducing Europe’s dependency on fossil-based products. It also helps the EU to meet climate change targets.”

Investing in Europe’s future

Bell sees a need to improve the regulatory environment and access to capital in order to encourage more investment in Europe.

The European Fund for Strategic Investments (EFSI) has been launched jointly by the EIB Group and the European Commission to help overcome the current investment gap in the EU by mobilising private financing for strategic investments.

“The projects funded by the EFSI will cover a much broader range than those from Horizon 2020, and will have an immediate impact on job creation and growth. The first round of EFSI investments included large bioeconomy projects.”

Another initiative launched by the European Investment Bank Group in cooperation with the European Commission under Horizon 2020 is InnovFin. It consists of a series of integrated and complementary financing tools and advisory services designed to support investments from the smallest to the largest enterprises.

“Building the bioeconomy is a joint endeavour, involving public authorities at all levels, and most importantly entrepreneurs, primary producers, scientists and civil society at large. If we can maintain our technological leadership, Europe will continue to produce innovative, sustainable and high-added value products that can reach global markets,” concludes Bell.

After a passing tech boom, Finland is now returning to its traditional source of wealth. Well over half of Finland's bioeconomy innovations are based on the sustainable use of renewable forest resources.

United on the bio-front



Petri Peltonen

Finland has recently seen the rapid emergence of a boundary-breaking bioeconomy cluster that is bringing together the forestry, chemicals and energy industries. Biotechnologies are also playing an important role in the food and health sectors.

Finland is among the world's top innovators in new bioeconomy products, says **Petri Peltonen**, Director General at the Finnish Ministry of Employment and the Economy.

"The bioeconomy, cleantech and digitalisation are all areas where global demand for new solutions will grow in the long run. Thanks to our strong expertise and sustainable domestic raw material base, our national economy can benefit from the future growth of the bioeconomy," Peltonen predicts.

Cross-fertilised portfolios

In order to improve the competitiveness of the Finnish bioeconomy, companies are encouraged to participate in innovative collaboration across industries.

Many new products are currently based on the utilisation of forest industry side streams, but the role of the chemicals industry will also grow as the use of bio-based raw materials increases.

"These industries complement each other, and cross-industry

collaboration will help companies increase the versatility of their portfolios. We should also adopt and accept new practices to make the most of this collaboration and the expert input provided by different industries," Peltonen says.

With plans to invest around EUR 3.5 billion in new bioproduct plants and pulp mills within the next few years, the growth of the bioeconomy seems promising.

However, for the industry to take off, a sufficient amount of biomass must be made available for the new plants. The Finnish government aims to increase the use of wood by 15 million cubic metres per year.

"The government is preparing changes to tax legislation to increase the average size of forest estates and to speed up generational change among forest owners. Forest owners will also be encouraged to adopt a more entrepreneurial approach to forest management," Peltonen explains.

Growth from key projects

Over the last ten years, the output of the Finnish bioeconomy has grown by more than EUR 10 billion.

The government aims to accelerate this growth and create more jobs by investing a total of EUR 1.6 billion in key projects over the next three years. Projects related to the bioeconomy will receive approximately EUR 300

million of this key project funding.

“The purpose of the projects is to strengthen collaboration between administration, companies, the business world and the academic community. Another aim is to remove obstacles related to legislation or permit processes that have proved to be bottlenecks in the past,” Peltonen says.

Public support to risk-takers

The general aim of public funding is to accelerate product development and commercialisation.

“It is important that companies and industries have faith in the future and show their willingness to invest in research and new ideas. The government supports risk-taking that promotes economic growth, exports and the creation of new jobs.”

The Technical Research Centre of Finland (VTT) and the Finnish Funding Agency for Innovation (Tekes) have an important role in the process. The funding and loans provided by Tekes are used to carry out research that not only provides commercial opportunities but also yields innovations that benefit society at large.

Peltonen adds that the reform of the legislation on public procurement will also help to promote new innovations.

“Public procurements amount to around EUR 20 to 30 billion annually. If one per cent of this sum, around EUR 200–300 million, can be earmarked for accelerating new innovations, we will be able to increase demand for new bio-based solutions.”

Peltonen believes that the key government-run projects of the future will develop the Finnish bioeconomy in a more focused way than before.

“But we must keep in mind that other countries are also taking major steps in their biosectors. In order to maintain our head start, we must safeguard our competitiveness and encourage companies to boldly experiment and develop new ideas.”



Out with fossil materials, in with renewable alternatives

This is the next major shift we will be seeing in industrial production. UPM is promoting new bioeconomy projects both through its own investments and through international funding and collaboration.

UPM’s Biofore strategy provides a strong foundation for the company’s R&D and the development of new products, affirms **Jyrki Ovaska**, Executive Vice President, Technology at UPM.

“We want to contribute to developing the bioeconomy by researching and manufacturing new bio-based products, such as biofuels, biochemicals and biocomposites.”

Developing new technology and launching new products takes time and requires a certain amount of patience. The journey from laboratory to market often takes seven to ten years.

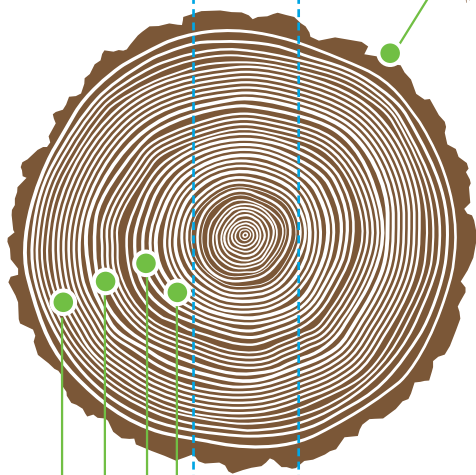
“The most significant new innovations are born by breaking the boundaries of traditional industry. However, entering unknown territory is always a business risk. This risk can be distributed by collaborating with leading equipment suppliers and networking with research institutions and other businesses,” Ovaska says.

>>



LOGS for sawn goods and plywood

BARK and BRANCHES for renewable diesel and energy



EXTRACTIVES for renewable diesel or biochemicals

FIBRES for biofibrils and biocomposites

LIGNIN, CELLULOSE HEMICELLULOSE for biochemicals

FIBRES for pulp

Wood raw material is the basis of UPM's businesses.

'Drop-in' alternatives

Ovaska predicts that bio-based products will not entirely replace fossil-based products. The two are likely to co-exist long into the future. It furthermore takes time for new products to become established in the value chain.

"We aim to develop what are known as 'drop-in alternatives'. Our goal is to manufacture second-generation renewable biofuels and biochemicals that are similar in molecular structure to petrochemical products. This lowers the technical threshold for using the products and enables customers to adopt new products without any additional effort.

"This is one way of minimising the risk associated with new products. It also accelerates time to market and enables scaling of production," Ovaska adds.

Ovaska points out that development and investment can also be supported through deregulation.

"Industries such as energy and biofuels are strongly regulated by the EU and its member states, whereas the regulations concerning biochemicals are not as strict. Launching new products is also hindered by processes related to the technical approval of products, which are often slow and complex."

Bottom-line value in piloting

Research can be carried out in laboratory conditions up to a certain point, but new products and manufacturing processes must be tested in demo and pilot plants at an early stage.

"In large-scale process industries, piloting is indispensable. Only piloting can provide sufficiently reliable

data as to whether new products are effective and whether costs can be brought to a level that will make business profitable in the long run.

"We have been unable to test all our new innovations in Europe, so we have piloted our manufacturing process elsewhere, for instance in the United States. Now this problem is being tackled by increasing funding for building new pilot plants capable of testing bio-based products."

Launching the actual production of new innovations often requires major investments in equipment. UPM recently invested EUR 179 million in the Lappeenranta-based biorefinery in Finland that manufactures UPM BioVerno fuel.

Kudos to bioeconomy strategy

Ovaska points out that it is vital to distribute the burden and risk related to the funding of research and investments.

The European Commission, for one, participates in funding research and innovation projects in collaboration with industry. Among the financial instruments used by the European Commission are the joint initiatives of the Bio-based Industries Consortium (BBI), which aim at developing the sustainable bioeconomy sector through new investments.

UPM is one of the founding members of BBI, which has a budget of around EUR 3.7 billion.

As an example of recent collaboration under the new funding model, Ovaska mentions the ValChem project coordinated by UPM. The EU has contributed EUR 13.1 million to funding this EUR 18.5 million project.

Other participants include Swedish chemicals company SEKAB, French start up METabolic EXplorer and

Technische Universität Darmstadt.

The ValChem project taps into a vast body of expertise covering the forest industry, chemistry and biotechnology. It aims to produce wood-based chemicals that rival oil-based materials in terms of quality and production costs.

“The project is a good example of how EU funding supports bioeconomy projects and distributes the risks associated with funding. As we are focusing on a specific product segment, our customers are also involved in the development work from an early stage,” Ovaska says.

“Naturally, we cannot rely on public funding, but it does contribute to accelerating our product development and decreasing risks.”

Open doors to partners

Ovaska praises the solid results that have been achieved through public funding and research collaboration with the Finnish Funding Agency for Innovation (Tekes) and the Technical Research Centre of Finland (VTT). With the help of public funding, Finland has become part of a close-knit international community in the business and research world.

“We boast a wealth of expertise in different areas, but we have been fairly ineffective at translating innovations into commercial products and achieving large-scale production. The same applies to the EU as a whole” Ovaska says.

“We would like to see the Finnish funding model become more international. We would also gladly open the door to foreign operators, as the largest markets are ultimately abroad. International collaboration would benefit both large and small companies alike.”



Innovating a sustainable future

Thanks to its ground-breaking innovations and pioneering R&D, UPM stands at the forefront of the bioeconomy breakthrough.

Heikki Ilvespää, Vice President of Research & Development at UPM confirms that a breakthrough in second-generation biochemicals is the next major target on UPM's R&D list.

“We have made systematic progress in this sector, and we have already launched our first biochemical products such as GrowDex and BioPiva on the market.”

One potential application for biochemicals is manufacturing plastics from renewable raw materials. The pulp derived from wood can be broken down into sugars, which can be processed further into chemical building blocks.

In the future, materials produced in this way could be used to manufacture virtually any product that is currently made out of plastic, such as beverage bottles for the soft drink industry.

UPM is also doing research on biofibrils and lignin. The GrowDex cell culture medium, for example, which is based on biofibrils, is an intriguing new area of research. It's a product meant for biomedical research that can be used to grow different kinds of human cells.

>>



Heikki Ilvespää

“We have made systematic progress in this sector, and we have already launched our first biochemical products such as GrowDex and BioPiva on the market.”

– Heikki Ilvespää

“Our essential strength lies in growing and sourcing renewable biomaterials in a sustainable manner, but our core competencies extend all the way to processing raw materials.”

“We strive to use as little raw material and energy as possible, and we even utilise by-products and residues in our products. This model is ideal for the fast-growing bioeconomy and circular economy, which entails efficient utilisation of scarce resources.”

High-level functionality

Competitive pricing is crucial for renewable products such as biochemicals and biofuels, although environmental aspects are also becoming increasingly important as a selling point.

“Biochemical-based products have a smaller carbon footprint, so it’s important to start adopting sustainable solutions in the chemical industry as well. However, we need to carefully consider how much further the products should be processed in order to maximise the benefits,” notes Ilvespää.

“The closer we get to consumer goods, the higher the level of functionality required of the biomaterials. In addition to being environmentally friendly, the products should also perform better than fossil-based competitors to get the supply chain flowing smoothly.”

New demand drivers

There is growing demand for products manufactured from biomaterials thanks to changing consumer preferences and efforts in various industries to reduce dependency on fossil-based products.

Food industry titans are increasingly using bioplastics for packaging, and even car manufacturers are adopting more and more renewable and recyclable materials.

“This makes an excellent foundation for UPM’s short-term growth. The demand for products made from renewable materials just keeps on expanding,” Ilvespää explains.

Core of the circular economy

Ilvespää believes that companies like UPM will play a significant role in the evolving economy based on renewable products and recycling.



Cleaner city traffic with wood-based diesel

UPM is conducting field tests of its novel wood-based diesel fuel in urban buses together with Helsinki Regional Transport (HSL) and the Technical Research Centre (VTT).

A Helsinki city bus in its signature shade of blue cruises comfortably down Mannerheim Street, the ‘main drag’ in the Finnish capital. When it reaches the corner of the Helsinki Music Centre, it turns right and parks in front of UPM’s Biofore House.

Both sides of the bus sport green UPM BioVerno tapes indicating that the vehicle is fuelled with renewable wood-based diesel and generates fewer hazardous emissions.

Its tour around the city marks the launch of bus field tests that will run for at least a year. The tests will evaluate the performance of UPM’s renewable diesel in terms of its fuel functionality in bus engines. Its emissions and fuel consumption will be compared to those of fossil diesel.



Nils-Olof Nylund

“We are delighted to participate in the Helsinki Regional Transport initiative for emission-free public transport with our bus fleet tests. One of the main targets of the initiative is to replace fossil fuels with renewable biofuels in the coming years,” says **Sari Mannonen**, Sales and Marketing Director at UPM Biofuels.



Sari Mannonen

Reducing tailpipe emissions

Various research centres have produced excellent results with UPM BioVerno diesel in numerous engine, vehicle and fleet tests. The studies have confirmed that UPM BioVerno matches the performance of the best quality diesel fuels, yet reduces tailpipe emissions significantly.

“UPM BioVerno generates up to 80% fewer greenhouse gas emissions than conventional fossil diesel fuels during its lifecycle. The latest studies

prove that UPM BioVerno diesel also reduces harmful tailpipe emissions significantly – and that in practice means better air quality,” emphasises Mannonen.

“In the first phase we will use a diesel blend that contains 20% UPM BioVerno. Later we will run a 50% blend in the test vehicles. The target is to conduct test drives with pure renewable wood-based diesel as well,” she adds.

Road transport, maritime and aviation

The bus field tests also form part of the larger ‘BioPilot’ project

that is being coordinated by the VTT Technical Research Centre. The project’s goal is to encourage companies to commercialise renewable energy solutions in traffic.

According to Research Professor **Nils-Olof Nylund** from the VTT, the biggest benefit of ‘drop-in’ fuels like UPM BioVerno is that they are fully

compatible with all fuel distribution systems and cars but also with vehicles manufactured in the future.

Nylund says that advanced and sustainable biofuels could be a fast track to low-emission traffic for Finland. Investing in domestic biofuel production is cost-effective from a technological and economic point of view as well.

“Finland’s total traffic fuel consumption is around four million tonnes a year. Renewable biofuel production capacity is around 500,000 tonnes a year, which represents around 10% of total fuel consumption. In this respect Finland is in a very good position compared to any other country,” he says.

“Renewable biofuels can replace conventional fossil fuels not only on the road but in maritime and aviation as well,” he says.

VTT has previously tested UPM BioVerno diesel both in passenger cars and bus engines with great results. The new bus field tests mark a continuation of VTT’s long-term collaboration in testing with UPM.

Towards emission-free traffic

The Helsinki Regional Transport (HSL) aims to decrease CO₂ and other hazardous emissions by over 90% in public transportation by 2025.

“Increasing use of public transportation is important for sustainable development in general. Our strategy sees advanced biofuels as a perfect match for us because they can





be adopted immediately. Our target is to fully replace fossil fuels with renewable biofuels by the year 2020,” confirms **Reijo Mäkinen**, head of public transportation at HSL.

The tests are being conducted on four identical, low-emission Volvo Euro VI Class buses with efficient engines. The buses will be operated by Transdev Finland on HSL’s regular bus routes.

Two buses are using UPM BioVerno renewable diesel and the other two are fuelled with conventional fossil diesel. Both VTT and the bus manufacturer Volvo will check the test buses before, in the middle and at the end of the testing period.

“The environment is one of Volvo’s three core values along with safety and the high quality of our products. These test drives place us at the forefront of development also in this field,” confirms **Tom Rönneberg**, who is responsible for product technology at the Volvo Bus Centre.

“The new Volvo Euro VI buses perform a continuous cleaning process of the exhaust system during normal driving conditions. Using clean fuels in the engines will reduce the process and the need for maintenance for the vehicles. With a clean fuel the maintenance costs will decrease,” he adds.

St1 is the distributor of the fuel used in this project. UPM BioVerno has been available at St1 filling stations in Finland as part of their Diesel Plus fuel since spring.



Slush is one of the world’s most important business events dedicated to technology and growth. This year the spotlight shone brightly on green transformation.

Slush is a two-day event where eager startups share their innovations in the hope of attracting angel investors and sparring partners to support their budding businesses. Slush 2015 brought together more than 1,700 startups and some 15,000 attendees in Helsinki last November.

More than ever before, this year’s event focused on themes related to the bio-based and circular economy. **Jyrki Ovaska**, Executive Vice President, Technology, presented UPM’s visions for sustainable growth and new partnership opportunities to a packed audience crowded around the Green Stage.

“We can offer startups fantastic prospects for cooperation in several business areas like forestry and wood sourcing or production, as well as

innovations in areas such as the sales and supply chain. We can also offer our prospective partners opportunities to use our patents that fall outside our core businesses. As for the circular economy, we would like to cooperate with partners who can help us exploit our side streams more efficiently.”

Ovaska notes that even well-established companies like UPM need the same bold mentality as startups in today’s business climate.

“Building new technologies, products and businesses requires a lot of curiosity, new competences and determination for research and development. We can’t do all the work alone, so we’re looking for partners everywhere from universities and research institutes to startups.”



The perfect match

One of the new businesses presenting its ideas at Slush this year was PolarSol, a Finnish company that develops and fabricates heating and cooling systems based on renewable energy for industry, consumers and the public sector.

Erik Raita, PolarSol's marketing and communication director, was more than satisfied after spending two intensive days at the event.

"This was our first time attending Slush. We expected a lot from the event beforehand because it brings together customers, investors and other important players. The investor matchmaking sessions offer a great opportunity to create new contacts for companies specialising in energy, the environment and clean technology."

PolarSol's innovation is a new-generation heat exchanger that can be used effectively for applications such as collecting waste

heat from industrial condensation waters. Its products are manufactured at a factory located in Joensuu, Finland.

Raita presented PolarSol's business to **Esa Laurinsilta** in the 'Speed Dating for Circular and Clean Solutions' session. Laurinsilta, Director for Strategic Partnerships at UPM, agrees that the event is an excellent opportunity to make new contacts and hook up with potential business partners.

"It also allows us to spotlight green themes and boost the growth of the bioeconomy and circular economy. We want to challenge startups to develop new ideas and opportunities for using sludge, ash and, in particular, waste heat derived from the pulp and paper process," says Laurinsilta.

Forests of opportunity

The Green Stage – in which UPM was a key partner – brought biomaterials, healthcare and transportation into the limelight this year.

Elisa Nilsson, UPM Vice President, Brand and Communications emphasises that digitalisation will not undercut the role of biomaterials and sustainable products. On the contrary, in the future they will matter more than ever.

"Slush strengthens our faith in the future of promising new ideas, technologies and materials. I feel it's our task to remind everyone here that the forest is full of new opportunities. Slush is the perfect place for UPM to broadcast its message."

Digital gateways

This year UPM – now attending the event for the second time – presented a tangible challenge to app developers.

"Working together with the Guides and Scouts of Finland, we are looking for mobile game developers to create a game that motivates younger generations to learn about forests and the opportunities they offer from a fresh new perspective," says **Paula Savonen**, Marketing & Customer Support Manager for UPM Wood Sourcing and Forestry.

UPM is also engaging in startup collaboration in the field of forestry and wood sourcing.

"We want to create a service for forest owners combining different online data sources and mobile technology. We want the service to be easy to use and understand, our ultimate goal being to help small-scale forest owners to realise the value of the forest they own," she adds.

As much as 30% of Finland's forested area has gone for thirty years without any forest management, thinning or final felling.

"There is potential to increase the area of privately owned forest designated for forest management and sustainable felling. New approaches are needed to activate the private wood market," concludes Savonen. ○

The Paris

climate convent

– Will Europe gain the competitive edge?



ion

A total of 196 countries from around the world gathered in Paris for the 21st UN Framework Convention on Climate Change this December. Its aim was to reach an agreement on halting climate change by reducing greenhouse gas emissions.

Finnish Minister of Agriculture and the Environment **Kimmo Tiilikainen** estimated on the eve of the conference that a strong message from the climate convention to the international financial market and business community will be the key to future progress.

“In practice this means taking decisions and concrete actions to guide private funding towards cleantech and renewable raw materials. Our transition towards a bio-based economy requires that we abandon the current financial model based on fossil raw materials – but the change must be profitable for both businesses and investors.”

Tiilikainen points out that the credibility of an international climate convention cannot rely solely on sanctions.

“We will not be able to assess the validity of the agreement until we have seen the reactions of the international business community and the financial market in the long term.”

At present, there is regrettably no way to completely stop climate change.

“International conventions mainly try to limit the changes to an acceptable level, which is what we must of course try to do. The ultimate issue is the availability of clean water and food on our planet. If we are unable to achieve a change, we will be in trouble in the future,” he warns.

Minds more open

The convention in Paris was attended by 196 signatories and included national climate goals that all signing countries will try to achieve beyond the year 2020.



Kimmo Tiilikainen

ANNOUNCED INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDCS) FOR COP21

USA

26%–28% below its 2005 level by 2025 and to make best efforts to reduce its emissions by 28%

CANADA

reduce GHG 30% below 2005 levels by 2030

EU

40% reduction by 2030 compared to 1990

At the time of publishing 149 countries had announced their contributions, which covers 90% of global emissions. Many important oil-producing countries have not announced their input yet, inc. Saudi Arabia and Qatar.

Tiilikainen notes that the general attitude towards the climate convention has evolved positively.

“Several participating countries had drafted their own climate plans. What is most important is that the superpowers, such as the United States and China—which are in a key position here—are willing to do more for the climate.”

One of the most difficult questions in terms of reaching an agreement was the division of responsibility between developing and industrialised countries.

“My hope is that there are only a few countries still voicing the opinion that industrialised countries must foot the bill alone. Wealthy countries cannot be obligated to carry the entire burden; instead, we must urge private investors to channel funding in new directions.”

Previous climate conventions have proposed that an annual total of USD 100 billion in public and private funding should be allocated to developing countries to support their efforts to cut emissions and mitigate climate change up to 2020.

“According to last year’s statistics, the funding has already increased to 62 billion per year, or around two thirds of the target level,” Tiilikainen points out.

“Due to the current economic situation, Finland, for example, will not be able to increase its share of the funding burden before 2020. We will, however, honour our commitments, and we are willing to work hard to make businesses more committed to funding this process.”

Forests source for sustainable materials

Growing forests bind a large amount of carbon dioxide. Tiilikainen points out that the convention did not include any detailed regulations on carbon sinks or similar issues, but the national proposals recognised the significance of forests in preventing climate change.

“Agreements have already been made to stop the eradication of tropical forests. This is the only concrete issue addressed so far that directly concerns forests,” notes Tiilikainen.

“Finland and other countries with plentiful forest resources must keep reminding others of the fact that sustainably managed forests are an excellent source of renewable raw materials to replace fossil raw materials.”

Tiilikainen sees sustainable forestry and the bioeconomy as forming the core of the climate process.

“There are plenty of businesses in the Nordic countries that focus on the future and want to be involved in resolving these issues. I believe the forest-rich Nordic countries could co-operate even more closely than they do currently.”

Headway in EU climate policy

The European Union conducted negotiations in Paris based on goals set by the Commission. Tiilikainen says that the member states support the Commission’s policies but will wait until the signing of the convention to further specify

RUSSIA

25–30% cut below 1990 levels by 2030

CHINA

To achieve the peaking of carbon dioxide emissions around 2030 and making best efforts to peak earlier

INDIA

33–35% reduction of emission intensity of GDP by 2030 compared to 2005, 40% of energy from non-fossil sources by 2030

JAPAN

26% reduction by 2030 compared to 2013 reduce GHG 30% below 2005 levels by 2030

responsibilities. The emissions trading system will also be reformed after the climate convention.

“Power supply sources and industrial structures in the EU member states – including land use, housing and climate – vary a great deal, which means that agreeing on emission reductions is not always an easy task even within the EU. Internal disagreements will most likely be ironed out in several meetings after Paris.”

Tiilikainen points out that the EU aims to reduce emissions in the most cost-efficient manner available.

“Reductions must occur in areas where results can be achieved effectively while keeping costs as low as possible. This principle is set forth in the EU climate policy, but the feasibility of practical applications cannot be determined until later. Hopefully, the member states will not get stuck arguing how much each party needs to cut emissions that are not included in the scope of emissions trading.”

Tiilikainen emphasises that a comprehensive climate convention will facilitate the implementation of the EU’s own climate policy and support European industry in global competition.

“The EU will proceed with its own climate policy no matter what. The larger the proportion of emissions covered by the Paris convention, the stronger the competitive edge gained by European industry,” he concludes. ○

LEG-UP FOR EUROPEAN INDUSTRY FROM CLIMATE AGREEMENT

The climate agreement may be the first step in levelling the playing field between Europe and other economic regions, predicts **Ahti Fagerblom**, Manager for Energy and Climate Policy at the Finnish Forest Industries.

“Not all industrialised countries have committed themselves to decreasing CO₂ emissions at the same rate as Europe, so the current agreement is not fully equal yet. However, this is a step in the right direction as other economic regions are now more dedicated to climate actions.”

The ultimate goal of the agreement is to limit global warming to below two degrees. The agreement commits countries to implementing transparent actions, but the carbon emission reduction targets are not legally binding.

Fagerblom points out that the EU’s CO₂ emission targets are still more ambitious than those of competing economic regions like the US, China and Japan. The agreement does not include the global emission trading system either.

“Here we have a danger that the EU will now imagine that the playing field is level and that there is no risk of carbon leakage.”

Forestation has gained importance as a tool for reducing CO₂ emissions.

“For us it is important that wood is seen as a renewable raw material that supports climate targets. People have to understand that when forests grow faster than they are harvested, then our carbon storage balance is positive.”

The forest industry is the most important producer of bioenergy in Finland. The wood raw material is made into pulp and other products, and the side streams are converted into bioenergy.

“By investing in forests we help to promote their healthy growth. We can utilise our forest resources and maintain a good balance of resources at the same time.”

Call for transparency in international climate policy



Finnish researcher Antto Vihma wants to see transparency and comparability become key tools in the consistent evaluation of climate policy actions.

Finnish researcher **Antto Vihma** wants to see transparency and comparability become key tools in the consistent evaluation of climate policy actions.

International climate summits are like enormous flagships where world leaders gather to negotiate climate issues on the highest political level. The new climate summit in Paris will not change the world overnight, but the main point is to keep the process moving forward.



Antto Vihma

“I hope the conference can help us create an international system for monitoring the transparency and comparability of climate actions. Countries could for instance announce their climate policy results and set new targets every five years so that their progress could be monitored

constantly and systematically,” says Antto Vihma, a climate policy expert at the Finnish Institute of International Affairs.

Vihma concedes that the UN-led climate process has its weaknesses but, for now, there are no better options on the horizon.

“The interests of superpowers like the US and China are critical to the progress of the climate process, so the UN cannot be blamed. I doubt the result would be any different if the forum were different and there were fewer players at the table.”

France played the gracious host

Vihma praises the ambitious host country France for its thorough preparatory work to conclude an international climate agreement at the Paris summit. For example, the chair regrouped the agenda under four pillars, which was a marked improvement on previous meetings.

“The chair’s first objective was to register emission-cutting targets that



“I hope the conference can help us create an international system for monitoring the transparency and comparability of climate actions.”
– Antto Vihma

individual countries plan to execute after 2020. This alone was one of the key achievements of the meeting,” says Vihma.

The second pillar focused on concluding a traditional intergovernmental agreement supplemented by separate legally binding decisions.

Vihma emphasises that it is pointless to judge the success or failure of the summit by a single target such as a commitment to a 2°C global warming limit.

“The 2°C target is impossible to reach – so much is obvious from the emission-cutting targets announced by the participant countries. The figure could serve as an overall target, but individual countries cannot be forced to make it a legally binding obligation.”

Superpowers readier to commit

Vihma points out that the United States and China had earlier issued a joint announcement on climate

change emphasising their commitment and willingness to reach a climate agreement in Paris.

“This marks a clear change from the past, and it was a good positive signal for the success of the meeting,” he adds.

“China is facing serious air quality problems that are causing general discontent among citizens. To address this problem, China has been investing in renewable energy production. Although China has been cautious to commit to international agreements, it has been working hard to address climate issues internally.”

Meanwhile in the US, shale gas production and increasing use of renewable energy have contributed to cutting down CO₂ emissions and the use of coal in energy production.

“The Obama administration has been willing to execute a more ambitious climate policy, but due to the divided political situation, the formal ratification of an international climate agreement is difficult for the US.”

The question of finance

The summit’s third pillar focused on financial issues. Emerging economies will need international financial assistance to adjust to the long-term impacts of climate change.

Vihma predicts that it will be difficult to reach a legally binding agreement on financial issues. Instead, individual countries are announcing their own short and long-term commitments to financing climate change actions.

“Sharing the financial burden of climate change policy splits us into two camps, with the emerging economies of the south on one side and the industrialised countries of the northern hemisphere on the other. The financing of climate policy triggers internal disputes even in industrialised countries. Added to that, the bleak outlook of the global economy also impacts financing and the willingness to share costs.”

Emission trading slowly takes off

The fourth pillar was the ‘Lima Paris Action Agenda’, or the commitment to climate change mitigation made by companies, cities, subnational regions and investors.

“The position of industry representatives varies a lot on climate issues, with stances diverging even from sector to sector. Certain stakeholders purposely set unrealistic targets like creating a global carbon emission trading system or a common taxation system for CO₂ emissions. These goals were obviously impossible to attain at the summit,” notes Vihma.

“The emissions trading system is coming along, but slowly. For instance China announced earlier this year that they are moving from pilots to an emissions trading system that covers the whole country after 2017. There are individual emissions trading initiatives in progress around the world, but setting up a global system is a difficult task.” ◉

Bioeconomy mitigating climate change

The Forest Solutions Group (FSG) sent a firm message to the UN's Climate Change Conference: Sustainable forestry and bioeconomic innovation are the best ways to cut greenhouse gas emissions and mitigate climate change.

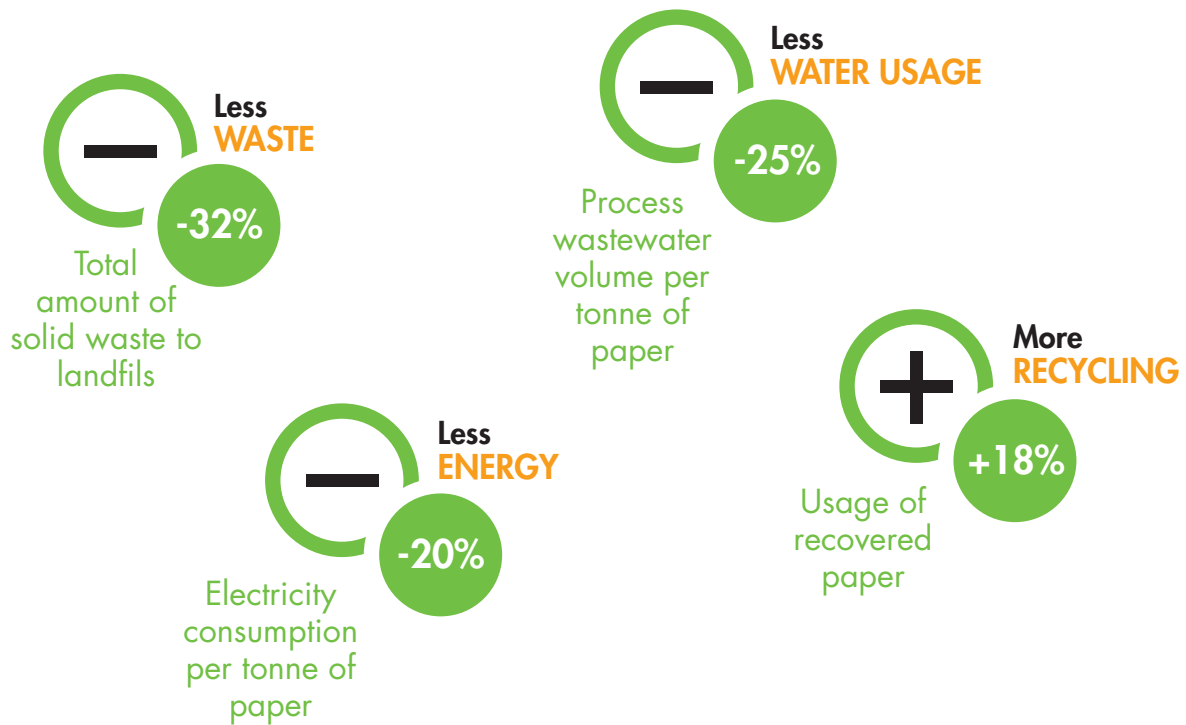
The key principle of sustainable forest management is that forests should be allowed to grow at a rate that increases or at least maintains the current area of carbon-binding forest biomass.

“The sustainable forest industry is regarded as a carbon-neutral industrial sector because it fabricates forest biomass-based renewable products without presenting a risk of increasing CO₂ emissions,” says **Päivi Salpakivi-Salmaa**, Vice President, Environment and Responsibility at UPM.

Sustainable forestry has three cornerstones: helping forests to regenerate, maintaining carbon-neutral production, and safeguarding biodiversity. The more diverse a forest's ecosystems, the less vulnerable it is to the physical changes brought by climate change.

Salpakivi emphasises that sustainable forest management is a business fundamental for UPM and also for all other forest companies that operate responsibly.

“The forests owned by UPM grow faster than they are harvested. Their annual growth rate suffices to neutralise



all of UPM’s combined carbon dioxide emissions in Finland and Germany – and the forests we own account for only 10–15 per cent of the wood-based raw material that we use in our production processes,” she says.

Goodbye to fossil raw materials

The Forest Solutions Group notes that the forest industry already now fabricates many biomass-based recyclable products that can replace fossil raw materials.

Salpakivi adds that the whole point of UPM’s Biofore Strategy is to replace fossil raw materials with recyclable products fabricated from renewable bio-based materials.

“In addition, we continually invest in projects to improve our resource efficiency and emission-free energy production. Thanks to continuous improvements and innovations, we have successfully decreased our waste levels and water and energy consumption.”

The FSG has also urged policymakers to agree on common principles for calculating greenhouse gas emissions generated through the use of different raw materials. These tools would help different countries to create consistent policies and reduce regulatory risks.

The FSG’s member companies are committed to promoting sustainable forest management and meeting the global demand for forest products by boosting the use of renewable and innovative bio-based products. ○

FORESTS ABSORB CARBON DIOXIDE

UPM and the Finnish Environment Institute (SYKE) have been developing a method for assessing ‘ecosystem services’, i.e. the additional benefits derived alongside the production of wood-based products.

This pilot study focused on the environmental impacts of forests used for the production of one tonne of pulp. The study examined the amount of wood required for the production of one tonne of softwood pulp at UPM in Finland, as well as the time required for the trees to grow.

The results revealed that trees purify over eight million litres of water and absorb over 4,000 kg of carbon dioxide during their lifetime.

UPM’s operations are based on using wood in multiple efficient ways to produce not only pulp, but also sawn timber, plywood, composites, papers and label materials.

The company also utilises industrial by-products and residues to produce energy, bio-chemicals and renewable diesel.

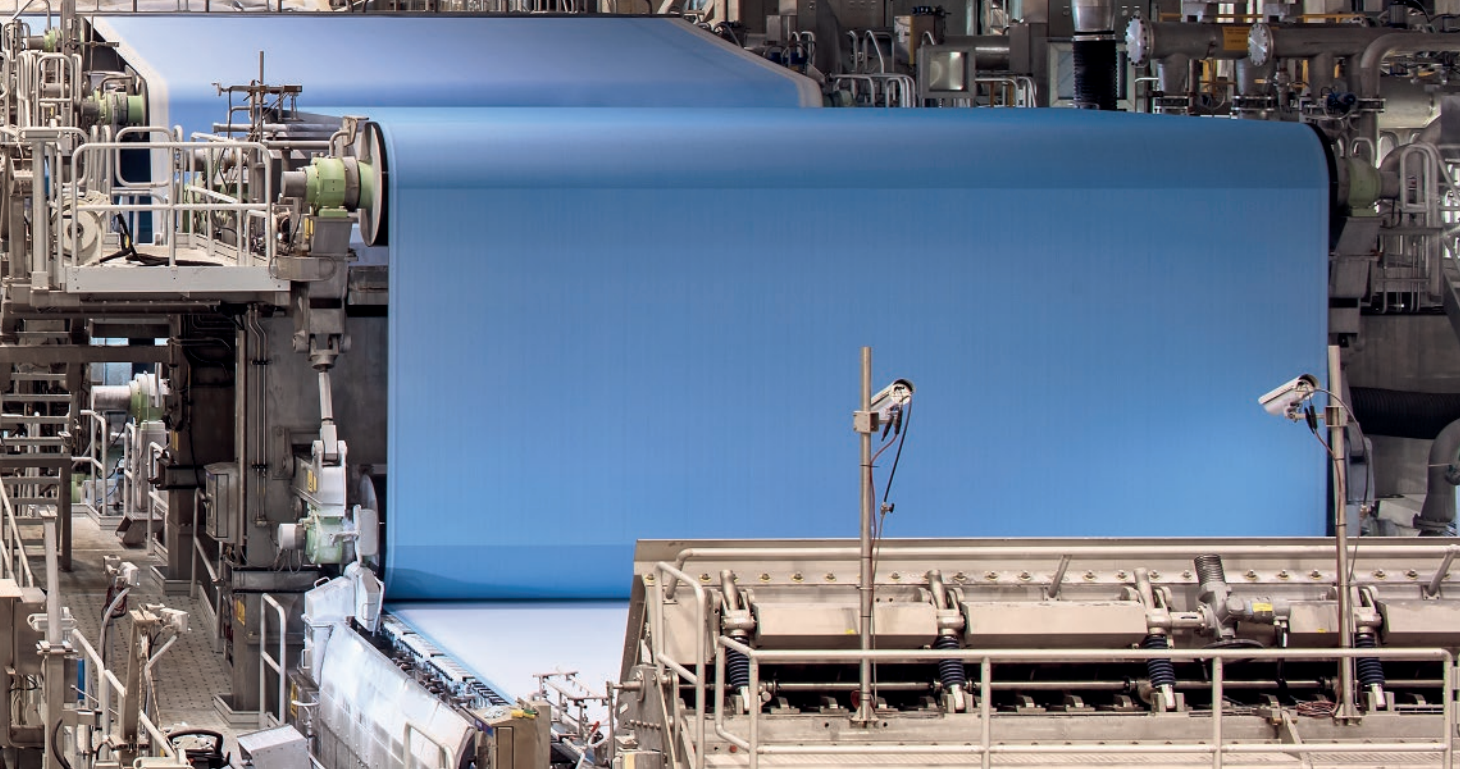
TEXT JAN HÖKERBERG
PHOTOGRAPHY UPM, TUOMAS UUSHEIMO



From left to right:
Tony Liu, Timo Heinonen,
Steve Masterson,
Pentti Putkinen

A Chinese project with a Finnish twist

UPM has completed its new paper machine project at the Changshu mill in China not only on time, but with an enviable safety record.



In September 2012, some 40 UPM leaders convened for a target-setting meeting in the lead-up to the PM3 (paper mill) project at the Changshu mill in China. They decided to name it ‘the Panda project’, as the panda has an important place in Chinese culture and history, symbolising harmony with nature.

Sustainability and safety have indeed been cornerstones in this huge EUR 277 million project, which was completed in December 2015. The new paper machine can produce up to 360,000 tonnes of high-quality labelling materials and wood-free uncoated papers annually. This ‘swing-concept’ machine also makes it possible for the mill to shift between grades.

“It’s been a very challenging project since it’s different from anything we have done before. We have to be able to produce two completely different products, and we couldn’t just copy and paste our familiar templates. Instead, we had to innovate something wholly new,” says PM3 Project Director **Timo Heinonen**, who has previously been involved in many new paper machine and rebuild projects in different roles.

“I’m very confident that we’ve found the solutions to reach the quality targets set for the products we’re going to produce,” he adds.

Emphasis on safety

Safety has been a top priority throughout the entire project. Heinonen says he is very happy to have reached over four million hours’ work time without a single lost time accident (LTA).

LTA is a leading safety management indicator referring to an accident occurring at work and resulting in at least one full day of absence from work duties. At UPM, the company-wide target was already very challenging: 5. The target for the PM3 project was even lower: 0.8.

“From the start, the most important priority was ensuring that nobody was injured, and we’ve worked hard to achieve this target. We implemented strict safety rules and we have spent more time on this than in any other project I’ve worked on previously,” says Heinonen.

Since dozens of contractors and suppliers were to be involved in the PM3 project, a comprehensive occupational health and safety (OHS) plan was produced in the project’s

early stages and was distributed to every new supplier. An OHS team was set up consisting of five full-time supervisors, one nurse and one assistant.

In order to improve safety levels and enhance safety awareness, the OHS team built a Safety Induction Training Room that could accommodate 60 people at a time.

“All personnel involved in the PM3 project – from senior management to construction units and workers – had to undergo safety training before being approved entry into the construction area,” says **Tony Liu**, Occupational Health and Safety Manager of the Panda project.

Every week, the OHS team also carried out several unexpected “safety walks”, inspecting the entire project site for full compliance with safety protocols. Violations were punished with fines.

Old and new partners

Heinonen and most other people in the project team have many years of experience, and many were already involved in the Changshu mill’s PM1 project between 2003 and 2007. One of them is PM3 Project Manager **Steve Masterson**, who continued



People concentrated in the control room.



working at the mill for some time after the installation of PM1.

“In many ways, these two projects have been similar but there are also differences,” says Masterson. “For example, this time much of our equipment has been sourced from China, while before almost everything was imported. However, the biggest difference – and challenge – has been the swing-concept machine. Both the machinery and the process itself have to be flexible so that we can make quick and effective grade changes. For example, the machinery has to be completely cleaned and reset for the next product.

“This has not only been a big challenge for the project team; it will also be a big challenge for the mill’s operators as they take over,” says Masterson.

Finnish consultancy Pöyry and Chinese design institute Haisum were chosen as the engineering companies. Voith of Germany was selected as the supplier for the new paper machine. This marks the first time that UPM bought a machine of this size from Voith.

“We were very happy to be selected

for this UPM contract. This has been a big and demanding project, because the machine will be producing different kinds of paper grades,” says **Johannes Rimpf**, Voith’s Project Manager for the PM 3 project.

On-site installation of the machine started in May 2015, after which Voith worked closely with UPM’s project team until early December, when the machine was handed over to the Changshu mill.

“It has been a high quality project all over, especially in terms of safety,” says **Wolfgang Windisch**, Installation Manager at Voith. “The regulations are strict and the safety targets are always followed up. I believe that UPM’s ‘Finnish touch’ has contributed to the project’s success on the safety front.”

Tight schedule

Even though the schedule was tight, UPM’s project team planned the project so thoroughly that there were no severe delays.

The project commenced with the construction of roads, buildings and other engineering.



Timo Heinonen

“This was the first time we’ve completed a project in China involving so many local suppliers and engineers. It has been a very positive experience for me.”

Timo Heinonen,
PM3 Project Director

Nantong Construction Group (NTCC) of China was selected as the general construction contractor. Nantong and UPM go way back, as Nantong was also involved in the construction of the PM1 project from 2003 to 2005. All of the subcontractors were selected by UPM and are mainly local companies.

“We managed to stick to the schedule despite the fact that we had many more rainy days than expected. During 2014 we lost 38 days due to rain, forcing us to stop all construction work for safety reasons and due to difficult working conditions,” says **Antti Mankki**, Project Construction Manager.

Growing together with our customers

The shutdowns of PM1 and PM2 in early 2015 were utilised for the project's tie-in works. Later on, in June, both PM1 and PM2 were shut down again for four days each and the entire mill for one day. This stint was devoted to tasks that required a total shutdown of the mill, such as upgrading the fresh and effluent water treatment plant, the power plant, the power distribution and remaining tie-in work.

Several sub-projects in one

At the same time, construction, design and installation work for the paper machine was underway, and several separate projects connected to PM3 were completed.

One of them involved upgrading the boilers' flue-gas desulphurisation system (FGD) for the removal of sulphur dioxide (SO₂) and lowering emissions for better environmental performance.

Another was an investment in a new precipitated calcium carbonate (PCC) plant. UPM chose Specialty Minerals Inc (SMI) as its equipment supplier, also signing a ten-year production contract with the US-based company. PCC improves paper smoothness and opacity as well as the efficiency of raw materials usage.

The mill further invested in a new 100,000 tonne cut-size sheeting line for the production of copy paper.

"This was the first time we've completed a project in China involving so many local suppliers and engineers. It has been a very positive experience for me," concludes Heinonen. "You might think there'd be cultural problems or that we wouldn't understand each other, but it is very easy to work with Chinese people. They get things done and are not resistant to change. After a decision is made, things happen very quickly."



Jaakko Nikkilä

"Our environmental and sustainability performance is the strongest promise we can give to our customers.

Many of them choose us because of that."

Jaakko Nikkilä,
Vice President, Sales,
Fine Papers APAC

Nikkilä, Vice President, Sales, Fine Papers APAC.

"An investment such as PM3 is always based on a long-term perspective with a life span of at least 20 to 30 years. Underlying fundamentals such as China's GDP growth, ongoing urbanisation and the increase in domestic consumption will benefit us. New companies and offices will be established, increasing the consumption of copy papers. Paper consumption at home is also expected to

With PM3 going into production, UPM will have a much broader product portfolio to support its customers in the Asia-Pacific region. This will include not only office paper and graphic paper, but also label paper and a versatile range of speciality papers supplied locally from China.

While the paper markets in Europe and North America are in decline, Asia is still a growing market, with annual fine paper demand totalling some 35 million tonnes and office papers growing at a rate of 2-4 per cent a year. For labelling materials, market growth is even stronger. The global growth rate for glassine papers was 3-5 per cent in 2014, but growth in Asia-Pacific was twice as high.

With the PM3 project close to completion, UPM's sales organisation is now looking forward to being able to offer its Asia-Pacific customers not only office paper and graphic paper, but also label paper and wood-free uncoated speciality paper produced in China. Previously, all label papers had to be imported from UPM's Tervasaari or Jämsänkoski mills in Finland.

"With the added capacity that PM3 brings, we will have very good opportunities to continue supporting the growth of our customers," says **Jaakko**

>>



PROFITABLE FROM THE GET-GO

Currently, the PM3 project is UPM's largest investment worldwide. A relatively large part of the project's inputs are being sourced from China, thus UPM has chosen to finance it partly from Group capital and partly from UPM China's cash flow.

"For us, it means we are on a true growth path for UPM Paper Asia. All the machines at the mill have good operating rates. PM3 will give us more capacity, and growth is very strong in Asia for the types of paper we will produce. It means we will have a valuable asset that is 100 per cent owned by our company in a very good location in the very heart of Asia," says **Raul Ikonen**, Vice President for Business Control and Finance at UPM China and Asia-Pacific.

Ikonen believes that the investment will be "profitable from the beginning even if output is lower initially, but the cash flow will be larger in the coming years," he says.

The entire investment is highly capital-efficient, which means that UPM should reap good returns on the capital it has employed.

grow. Label consumption will benefit from the same trends. More goods are being packed and e-commerce is gaining ground, which requires additional logistics labelling. All this is resulting in growth in overall label consumption," says Nikkilä.

Broadening portfolio

Even though the labelling materials market is still relatively small compared to many other paper market segments, it has great potential. Asian label paper customers with their multiple end-use applications clearly represent new opportunities for UPM. For example, the manufacturing industry is increasingly replacing traditional fasteners such as screws with self-adhesive tapes, which will increase the demand for release liners.

"In addition to self-adhesive label applications, there are manifold opportunities for release liners in graphic arts, industrial, tape, hygiene, medical and other end uses. We have a great deal of confidence in the future growth potential of a variable range of release liners," says Nikkilä.

Office papers hold a significant share of UPM's business in the Asia-Pacific region. UPM Paper Asia regards China as its home market and is focusing on the high and upper mid-range segments, where the company is a market leader. Also in other APAC regions UPM is a sizeable player in office paper markets.

Within the graphic paper segment, which includes paper for magazines, books, brochures and advertising material, UPM has chosen a more selective approach, and is concentrating on lower substance papers.

"We feel that we have the expertise for this segment," says Nikkilä. "It also gives us a sustainable approach to focus on paper that consumes less material."

New applications for speciality paper

"We will also produce wood-free uncoated speciality papers and thereby enter new market segments by tailoring new products for our customers. These paper grades can be stronger, smoother and bulkier, with tailored properties such as higher density or different shades. There are vast opportunities for speciality grades in different converting applications. We have the necessary expertise in the company and are familiar with the targeted applications," says Nikkilä.

Even though Chinese economic growth is slowing down, he believes there will always be certain segments and "growth pockets" that will offer new opportunities for UPM.

"We have a reputation for consistently delivering high quality both in our products and in how we serve our customers. For UPM, this is a long-term business. Our environmental and sustainability performance is the strongest promise we can give to our customers. Many of them choose us because of that," says Nikkilä.

One of the world's best paper mills

The UPM Changshu mill is state-of-the-art in many key respects: it sets the global benchmark for efficiency, technology, safety and environmental performance.

When UPM first arrived in China in the late 1990s, it took over an existing plant at a site in Changshu in Jiangsu province, not far from Shanghai and with an excellent port on the Yangtze River, the most important river in the history, culture and economy of China. UPM then inherited PM2, one of the existing paper machines at the mill.

In 2004, when UPM invested in a new paper machine, they named it PM1. This huge investment increased the mill's fine paper capacity by 450,000 tonnes per year, bringing it to 800,000 tonnes when PM1 was inaugurated in 2005.

PM3 will now increase the mill's capacity to well over one million tonnes per year. It will also enable the mill to offer multiple grades of paper.

"This has been a fantastic project so far. Everything has gone so smoothly," says **Pentti Putkinen**, General Manager of the UPM Changshu mill.

"Even though PM2 is a kind of swing machine that can produce both coated and uncoated paper, we haven't had a machine that can alternate between uncoated paper and labelling materials," he says.

"In fine paper you typically want to maximise bulk, but label paper is very dense and has no filler at all, so these two paper grades are total opposites in this respect," says Putkinen.

"Our challenge now is to minimise grade change losses so that we lose as little time and materials as possible in the shifts. I'm very confident that we can do it," says Putkinen.

The Changshu mill has a reputation for being one of the best mills in China. It has achieved excellent results in terms of resource efficiency. It has cut water consumption by 65 per cent, energy consumption by 25 per cent and waste to landfill by 60 per cent over the past ten years, and 99 per cent of the mill's waste is now recyclable.

"I think that our mill is one of the best in the whole world when it comes to efficiency, technology, safety and environmental performance," says Putkinen. ◊



Pentti Putkinen

COMPREHENSIVE TRAINING

UPM's Tervasaari mill in Finland is a world leader in labelling materials, or release liner. The mill has recently served as a 'mentor' to the Changshu mill, teaching new skills to the Changshu mill staff, who have had to learn to use a new technology that is totally different from that used for making fine paper.

UPM China provided plenty of training to operators of the new paper machine. Two groups of around 15 people went to Finland for two-week training sessions and also received training at a customer's site.

"They learned a lot during the day and enjoyed socialising in the evenings. We even heard that some of the guys went fishing and caught some perch, which they cooked for dinner," says **Tuija Rinne**, Vice President for Human Resources at UPM Paper Asia.

UPM Paper Asia employs some 1,550 people. According to Rinne, when PM3 is operational, the Changshu mill will have around 1,000 employees.

"I think that our mill is one of the best in the whole world."
Pentti Putkinen, General Manager,
UPM China

A front-runner in sustainability

Environmental issues are key for UPM China, which participates in a wide range of initiatives to promote sustainability.



In February 2014, when UPM decided to go ahead with the PM3 project, the decision was made to reduce the extent of the investment by not building a separate power plant for the new paper machine. Instead, the existing boilers would supply all three paper machines at the Changshu site.

“It was an excellent decision from an energy-savings point of view,” says **Mary Ma**, Head of Marketing, Communications and Environmental Affairs at UPM China in Shanghai. “It meant we could upgrade the existing boilers with state-of-the-art technology for a clean, energy-saving process.”

In line with its Biofore strategy, UPM wants to lead the integration of the bio and forest industries towards a new, sustainable and innovation-driven future.

Environmental issues are thus key for UPM China, which participates in a wide range of regional and global initiatives to promote sustainability.

A recent such initiative was the formation of the China Sustainable Paper Alliance (CSPA), which was launched in September 2015 by the World Wide Fund for Nature (WWF) and the Chinese Forestry Industry Association. Founding members include ten domestic and international companies covering China’s entire pulp and paper supply chain, including local and global producers such as UPM, as well as buyers such as HP, Fuji Xerox and IKEA. Members can join only by invitation.

“Together with CSPA we promote sustainable paper across the entire China market chain, from forest management and production through to buying and selling paper right up to recycling,” says Ma.

UPM supports two global sustainable forest management schemes: the Forest Stewardship Council (FSC) – an initiative



The Changshu mill uses less water and energy per one tonne of paper and produces less waste per tonne of paper than anybody else.

from environmental non-governmental organisations (NGOs) – and the Programme for the Endorsement of Forest Certification (PEFC) – which was set up by private forest owners. All UPM forests and units are FSC- and/or PEFC-certified.

“In 2006, UPM was the first paper company in China to receive both FSC and PEFC certification. We were also the first to launch FSC-certified copy paper in China. Today, 40 per cent of our capacity is sold as certified,” says Ma.

UPM’s Changshu mill was also the first in China to pass the audit of the EU Eco-Management and Audit Scheme (EMAS). Since 2012, UPM has been among the selected companies included in the Dow Jones Sustainability Indices (DJSI) and, since 2003, the company has participated in the United Nations (UN) Global Compact, the world’s corporate sustainability initiative.

Ahead of the competition

UPM’s Changshu mill in China is way ahead of the targets recommended by the government. The mill uses less water and energy per one tonne of paper and produces less waste per tonne of paper than anybody else.

“The water that comes out of our effluent plant is actually cleaner after being treated than the water that goes in,” says Ma.

In China, product safety is a big issue. The reputation of the paper industry has been damaged by many highly pollutive old local mills.

“UPM has chosen a totally different path. Paper from UPM is 100 per cent safe. We never use any hazardous chemicals in our paper-making. This has made us a front-runner in China, benefiting both our customers and the market,” says Ma. ◊

PM3 MILESTONES

August 2012: UPM announces its plan to build a new uncoated wood-free speciality paper machine at its Changshu mill in China.

February 2014: UPM’s Board of Directors decides to go ahead with the new paper machine (PM3) project.

June 2014: The ground-breaking ceremony for UPM’s PM3 project is held at the Changshu plant with about 100 people in attendance, including VIPs and representatives from UPM, contractors and equipment suppliers.

March 2015: The PM3 project moves from the detailed engineering and construction phase to the construction and installation phase starting with towers and tanks, piping, overhead cranes and building electrification.


September 2015: When most of the installations are completed, the project goes into the commissioning phase.



Mary Ma

“In 2006, UPM was the first paper company in China to receive both FSC and PEFC certification.”

Mary Ma, Head of Marketing, Communications and Environmental Affairs, UPM China



NEW

Changshu investment boosts growth opportunities

To meet growing demand in the Asia-Pacific region, UPM Raflatac has upgraded its machinery and invested in a new coating line at its Changshu factory in China.



The Changshu investment increases capacity but also enhances the capabilities of UPM Raflatac to produce filmic label materials and high-end products.

UPM Raflatac celebrated its 40th anniversary and 15 successful years in China by completing a EUR 14 million investment in a new coating line at the Changshu self-adhesive label stock factory. Machinery was also upgraded both in Changshu and at the Johor Bahru plant in Malaysia.

“This is an opportunity for us to increase our capacity by an estimated 50 per cent and at the same time increase our quality and bring a wider range of label products to China,” says **Jari Haavisto**, UPM Raflatac’s Vice President for Greater China.

The demand for self-adhesive label products is growing rapidly in China due to the increasing consumption of fast-moving consumer goods, growing e-business, rising use of automated product labelling and the expanding industrial use of pressure-sensitive adhesive labels.

The Changshu investment not only increases capacity, but also enhances the capabilities of UPM Raflatac to produce filmic label materials, high-end products featuring UV-acrylic adhesives, other special products and label stock tailored to customer requirements. The machinery upgrades and increased automation in slitting have further increased output and raised finishing to the higher level required by the rising demand for quality film-based products.

Many benefits from the PM3 investment

The new paper machine at UPM’s Changshu mill also gives UPM Raflatac an opportunity to purchase high-quality release liner locally in China instead of relying on imported paper.

“It’s a major change for the market with



Jari Haavisto

“This is an opportunity for us to increase our capacity by an estimated 50 per cent and expand into new markets.”

Jari Haavisto,
Vice President
Greater China,
UPM Raflatac

UPM now starting release liner production here in China. We can benefit from that, as will the whole industry in China, through shorter lead times and no customs handling. Release liner is not easy to produce but UPM is known for its high quality. Modern labelling machines are also very sensitive and require high-quality release liner,” says Haavisto.

UPM Raflatac’s UV-acrylic adhesives mark China’s first large-scale introduction of high-performance alternatives to solvent-based adhesives with increased resistance to exposures such as oils, chemicals and heat. They meet a range of needs in market segments including durable goods, home care, personal care and RFID. Customers now also have the option of making positive choices for sustainability by choosing certified FSC® and PEFC™ label grades.

UPM Raflatac’s Changshu factory exports about 50 per cent of its output to Asia-Pacific markets. With the investment completed, the company is well prepared to meet an expected increase in volume demand.

“Domestic consumption is increasing rapidly in China. Local brands are now growing faster than international brands, and local brand owners like to decorate their products. The demand for packaged food is increasing in China, and there is also increased interest in the safety of the package and packaging materials. All these trends support our business. We are already the best suppliers in China in terms of quality, logistical lead times, service and sustainable label solutions. I believe this makes us the best choice of partner for label converters and brand owners today and for the years ahead,” says Haavisto. ◉

Newbury takes print to the next level

If anyone can teach an old dinosaur new tricks, it's Newbury Weekly News. The UK newspaper's award-winning augmented reality solution makes images literally leap off the page.

“A very cool idea,” said the judges at Newsawards 2015. “We loved it and had great fun getting the 3D digital dinosaur to walk across the table! It’s entertaining, engaging and highly innovative.”

These were among the praises heaped on the new augmented reality solution pioneered by Newbury Weekly News, winners in the ‘Printed Innovation of the Year’ category at this year’s international Newsawards.

Berkshire-based Newbury Weekly News is printed by a family-owned independent publisher established in 1867. Despite fierce competition from much larger publications, the gutsy weekly – with a circulation of 15,000 and added online presence – walked away with the coveted best innovation title.

Popping off the page

The award was well-deserved by a solution that offers an experience unlike anything previously seen in traditional newspapers.

After downloading the Newburyi3D app, readers can bring images to life by hovering their mobile phone over the page. The photo – be it a hulking dinosaur, spinning planet or WWI tank – jumps off the page in resplendent 3D, fusing print and digital in an unprecedented way.

“It’s incredible technology that allows you to bring a car off the page and actually drive it across your desk, just as if it were a remote-controlled car,” says Newbury CEO **James Gurney**, who accepted the award in London last April.

“Readers are amazed at how it works and have been very positive and receptive to the pages,” he adds.

Search for the silver bullet

Newbury’s 3D solution proves there are customers who are discovering fresh and imaginative ways of rejuvenating print.

“I was excited about the potential of combining cutting-edge technology with traditional media. I believed it could bring a new audience to the core product and increase engagement. Everybody within the industry is searching for that silver bullet, and unless we keep trying out new ideas, we’ll never find it,” says Gurney.

The original concept came from Red Frog, the company behind the





With the new augmented reality solution, you can make a 3D dinosaur march across your desk by hovering a mobile device over the printed image.

interactive 3D technology. Impressed with their app, Gurney sent his six-year-old son to school armed with a 3D solar system for show and tell.

“The headmaster called to ask where my son had got such an incredible educational app. He said the children were awestruck and wanted to see more. This gave birth to the whole idea.”

The app’s interactive dimension has obvious appeal among younger audiences, but has it boosted the paper’s circulation?

“It’s too early to tell. We’re already averaging 22 hours of usage time every week. This figure is steadily growing, and I’m sure it will impact circulation as awareness grows. This has been proven by all publishers using the same technology with their book ranges.”

Newbury believes in the future of print

Newbury News is an independent, family-owned newspaper publisher that will celebrate its 150th anniversary in 2017. Based in Berkshire in southeast England, it publishes two weekly newspapers, the subscriber paper Newbury Weekly News and the free Newbury and Thatcham Advertiser. It also has two monthly publications, Newbury Business Today and Out and About magazine. The paper’s website is known as Newbury Today.

Newbury News remains very passionate about printed newspapers and prides itself as a forerunner in publishing technology in the UK. It has its own 24-hour print centre where it produces all its own newspapers and provides contract printing services to numerous independent publishers in the south of England. It prints around 80 different publications and almost one million newspaper copies every week.

UPM have been supplying Newbury for over 20 years. “We use both UPM’s improved or fine grades and standard newsprint. We enjoy a very open and frank relationship which over the years has helped our business. UPM are always accessible and helpful when called upon,” says Newbury CEO James Gurney.

www.newburytoday.co.uk/

PRINTED INNOVATION OF THE YEAR

Now in its 19th year, Newsawards celebrates excellence in 20 categories across three areas: Print, Digital and Business innovation.

Sponsored by UPM, the Printed Innovation of the Year title goes to creative or marketable newsprint applications that deliver commercial benefit to printers and publishers. Over 40 outstanding entries were submitted from mainland Europe and the UK this year.

Looking to build on the success of this category, all print innovators are invited to take part in next year’s competition. To enter, your innovation must be printed between 1 January 2015 and 5 February 2016. Entry forms are available at www.newsawards.co.uk/ and www.upmpaper.com/newsawards

No future for technophobes

Gurney sees great promise for the solution across several platforms. “We’re currently looking to launch 3DAR games later this year. Our readers will be able to get them for free and then have to purchase subsequent papers in order to expand the games and grow characters. It all looks very exciting.”

To survive and succeed, Gurney believes the industry has to be more creative and open-minded to technology.

“There seems to be an app for just about everything these days, from your kitchen kettle to your central heating – they’re evolving at an incredible rate. We’re all trying to innovate whilst at the same time protect our traditional roots. Many just like us at Newbury are working with cutting-edge technology.” ○

Makers of bestsellers

A powerful reading experience inspires, enlightens and entertains you. Most of the credit goes to the author, but high-quality paper that makes the book look and feel good also plays a role. Paper books retain strong reader appeal in markets such as Germany and Turkey.

We all know what it feels like to enter a book shop without any clear plan of what you are going to buy. It's almost impossible to decide where to start browsing. The supply is overwhelming. Each year, thousands of publishing houses produce thousands of new books to meet the insatiable appetite of their readers.

One of the most popular books last autumn was detective novel *The Girl in the Spider's Web* by Swedish author **David Lagercrantz**. The novel, which has been translated into dozens of languages, is a continuation of the mega-bestselling Millennium trilogy written by the late **Stieg Larsson**.

Suspense stories by Swedish detective novel authors are examples of successful novels that will live on after the hardback issue as paperbacks, audio books, eBooks and movies. In Germany,

the first paperback versions of Stieg Larsson's Millennium trilogy were published soon after the hardback editions. When the detective novel by Lagercrantz was published in German in the summer of 2015, the publisher Heyne Verlag published second, snazzy paperback editions of Larsson's original trilogy. The books were printed on UPM Book creamy paper.

Despite increasing digitalisation, readers still like printed books. For example, the world's largest book fair, which takes place in Frankfurt every October, drew more than 275,000 visitors, an increase of 2.3% compared with 2014. Almost 10,000 journalists and bloggers reported news about authors and books to all corners of the world.

There is plenty of news from Germany alone: more than 87,000 new titles were published in the country in 2014. That means millions of pages

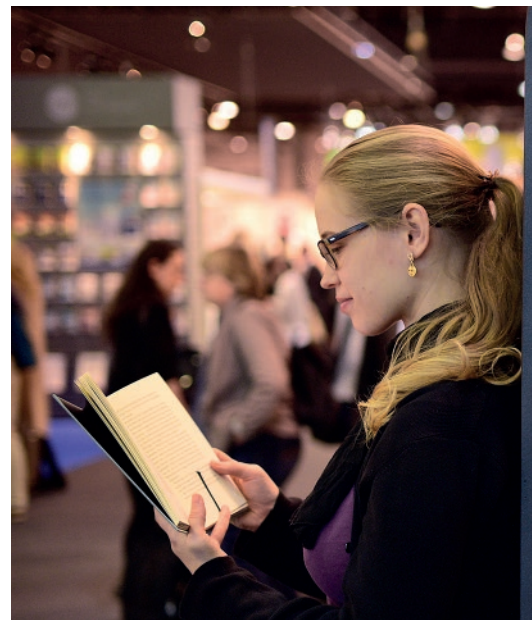
and countless numbers of book paper grades selected according to strict criteria. Despite the diversity, all authors, publishers and readers value the same basic properties: the colour tone of the paper, the touch and feel, and the contrast between the paper and the printed text, i.e. legibility.

Partner Salzer Papier

The paper grade that is used in the paperback editions of Stieg Larsson's books is manufactured at the UPM Schongau mill in Germany. The paper is distributed across a wide area, including the Polish, French, Italian and Turkish markets. The book paper business started in Bavaria in 2012 when UPM Paper ENA launched its cooperation with Austrian family business Salzer Papier.

UPM Sales Manager **Roland Mayer** has been involved in the business for around a year. "Salzer Papier was searching for a new supplier of wood-based printing papers. Little by little, we were able to find just the right paper grade for paperbacks in cooperation," Mayer explains.

The cooperation has been very successful. UPM has already taken a fair share of the German book paper market. The total volume of





Print proudly holds its ground. The world's largest and most widely publicised book fair is held every October in Frankfurt, Germany.



New German editions of Stieg Larsson's Millennium trilogy have recently been printed on UPM Book creamy paper.

the German market is around 90,000 tonnes per year.

The cooperation with Salzer Papier opened the door not only to the European book paper markets but also to a whole new kind of operations method. Paper machine 6 in Schongau had previously been used for large orders, but the book business is different: the print runs are often small. “In Germany, the first edition of a book is often only a couple of thousand copies, which means that we only need to use two paper reels,” Mayer says.

The first edition is always a hardback. A large share of the books on sale are hardbacks; they are a fairly familiar sight in book shops in Germany. That is not the case in Turkey.

People in Turkey read paperbacks

Sales Manager **Mert Ecer** is currently reading a copy of Andre Agassi's biography *Open*. Like most of the books printed in Turkey, his copy is a paperback. “It's because of the high prices involved. This forces publishers to publish their books as cheaper paperbacks,” Ecer says. Only high-quality books, such as art or coffee table books, are published as hardbacks.

Printed books are valued highly and are very popular in Turkey, a

country that is located both in Asia and in Europe. The number of books published increases year on year. In 2013, more than 42,600 titles were published in Turkey, and in 2014 the volume had already increased to more than 44,600. Ebooks have not been very popular as of yet. “We Turks prefer traditional printed books, because you can flick through them and make notes in them,” Ecer explains.

The future of the printed book seems promising: Turkey's population of 78 million is young and continuously growing. At the same time, there are more and more people who know how to read and write.

This favourable development has boosted sales of book paper. Of the paper grades offered by Ecer, Turkish publishers favour two grades: UPM Book creamy 2.0 and 1.8. Both of these are uncoated natural white papers.

Mert Ecer has successfully promoted the sale of UPM Book creamy in the book paper market. The total sales volume in Turkey is 25,000 tonnes per year. His efforts have been noted, and he was selected as UPM's Europe Paper Sales Business Hunter of the Year in spring 2015.

The nomination came as a total surprise to him. A salesperson at

heart, he was naturally pleased with the title, but he refuses to take all the credit for the success. “It was the entire team at UPM's Turkish sales office that did it. I'm very happy and proud to be part of the team,” Ecer says.

Success breeds success, and this is also true in the world of books. David Lagercrantz continued to narrate the lives of Mikael Blomkvist and Lisbeth Salander so credibly that his Swedish publisher has already announced that he will write at least two more sequels.

It is not likely that the good news will end here, since hardbacks are always followed by paperback editions. It is also likely that the novels will be printed on paper manufactured at UPM Schongau. ○

Staying healthy with WASH

Every workplace should offer safe drinking water, proper sanitation facilities and good hygiene. The WASH programme sets the benchmark for healthier work environments.

A safe, healthy workplace is the basic right of all employees. Safe, clean drinking water, as well as access to sanitation facilities, are human rights ratified by the UN in 2010.

UPM wants to make sure that all its employees, regardless of their country or location, work in an environment that is as healthy as possible. In line with this goal, UPM is the first forest industry company to commit to the WASH programme of the World Business Council for Sustainable Development (WBCSD). WASH is an acronym standing for 'Water, Sanitation and Hygiene'.

The programme aims to guarantee a healthy workplace for all, as well as prevent the spread of contagious diseases. It requires companies to monitor the water, sanitation and hygiene conditions within their organisation and to make any required improvements.

In launching this programme, the WBCSD addresses a major

problem. More than 1.8 billion people worldwide do not have access to clean, safe drinking water. Approximately 4.1 billion people lack sufficient sanitation or, in short, access to a proper lavatory.

The head of the WBCSD's water programme, **Joppe Cramwinckel**, presents a list of 35 leading international companies that have signed up for the WASH programme. The goal is to increase the number to fifty.

"When the project was initially launched, I wondered why companies were so slow to sign up. Then I realised that access to water, sanitation and hygiene is a huge issue and companies genuinely want to invest in it to make sure all employees have access. They want to be sure they won't run into any surprises in their systems. A company operating at a thousand sites is likely to have more difficulties in finding deficiencies than one with only five sites", Cramwinckel points out.

Getting more companies to sign



up for the programme can make a real difference. The input of thirty companies is estimated to bring direct benefits to over two million people. As the number of participating companies increases, the direct and indirect benefits multiply.

Raising awareness

UPM joined the WASH programme this autumn. The company sent out a survey to all its production facilities enquiring about local water, sanitation and hygiene conditions. A total of 54 production facilities from around the world responded to the survey and evaluated whether conditions at their sites could be

improved.

There is always room for improvement, even at highly advanced pulp and paper mills that operate in compliance with strict regulations.

Good sanitation facilities cannot be taken for granted at any location. UPM's occupational

healthcare physician **Tero Kemppainen** offers the example of a Finnish lumberjack who works in the middle of nowhere without a proper lavatory. As a hygiene precaution he always keeps wet wipes or clean water with him in order to wash his hands.

"Hand hygiene is extremely important for your health," Kemppainen says. "Diseases spread through touch, so if you remember to

wash your hands and watch what you put in your mouth, you'll avoid many problems."

Tap water is fit to drink in most European countries, but subcontractors working at a plantation in South America, for example, should always carry safe bottled water to quench their thirst.

Bottled water is also a good choice on business trips. UPM's instructions are very clear on this point: When you visit an exotic location, always drink bottled water and eat cooked food only. All employees who follow this rule generally avoid infection.

Plastic bottles are also handy as you can use them more than once – just remember to recycle them when you no longer need them.

Sharing best practices

UPM is working together with pioneering companies under the auspices of the WASH programme. "We share information about new best practices with other responsible companies. This offers us a broader view of how to operate responsibly," says **Päivi Rissanen**, UPM Paper ENA Director, Environment and Responsibility.

The WASH programme was launched in autumn 2013 in Geneva, Switzerland. UPM launched its own project this year by sending a survey to its production facilities. In 2016, a survey will be sent to sales offices, followed by forest management and wood sourcing teams in 2017.

After improvement needs have been identified, UPM will take action.

Good hygiene is after all a win-win: employees benefit from good health, and employers achieve savings in the form of reduced sickness absenteeism. ○

More than 1.8 billion people are without access to clean, safe drinking water.

An estimated 4.1 billion lack proper sanitation.



"The new drying machine does a brilliant job", says shift supervisor Mikko Pajari.

Mikko Pajari

TEXT HELEN MOSTER
PHOTOGRAPHY TUOMAS UUSHEIMO

A pulp mill is reborn

We take a tour of the newly revamped Kymi pulp mill to find out what's new, bigger and better. Has UPM's EUR 160 million investment made a visible difference?

Pine, spruce and birch logs are neatly stacked next to the debarking plant, with a couple of aspens completing the set. Next stop for these logs can be seen a little further away: a tall pile of wood chips. Conveyor belts criss-cross the area, taking the wood chips to the next stages of the pulp manufacturing process: digesters and scrubbers.

Trucks wait for their loads at one end of the mill area, while forklifts carry neatly wrapped white pulp bales from the warehouse. Some carry the red label 'UPM Betula', others the blue label 'UPM Conifer'. The bales contain the raw material for packaging, speciality paper, magazine

and fine paper manufacturers. Most of the pulp manufactured at the plant has already been delivered to UPM's own paper mill, where two paper machines turn it into fine paper.

We are in Kuusankoski in southeast Finland, at the heart of the Kymi pulp and paper mill. The 200-hectare integrated mill site is like a town within a town. The site has streets with real names such as 'Fibre Avenue', 'Wood Chip Road' and 'Sheet Street'. Odourless columns of white steam rise into the blue sky from the chimneys of the clean, orderly site.

Here, on the shores of the Kymi River, overlooking miles of coniferous forests, wood is turned into pulp and



Markku Laaksonen

pulp into paper. We are here to tour the pulp mill and see the results of a major recent investment project. New improvements include the extension of the debarking plant, the modernisation of the softwood fibre line and the installation of a new pulp-drying machine. What we are here to find out is how much this EUR 160 million investment has changed the pulp manufacturing process.

Pulp demand on the rise

We start our tour at the General Manager's office, where **Markku Laaksonen**, looking visibly satisfied, lists the benefits of the investment. Firstly, annual pulp production volume is set to increase from 530,000 to 700,000 tonnes. Secondly, the pulp is easier to grind, which will improve its quality. Thirdly, the mill is even more energy-efficient than before. Last but not least, the most important benefit is that the mill can now maintain a faster pace of pulp production, because the new drying machine can dry pulp at a much quicker rate than the old one.

The details will be revealed to us soon as we tour the site, but first we want to know how such an ambitious investment project could be carried out at a busy mill operating at full steam. Were all machines started on schedule – and were there any costly delays?

“We were able to start the drying machine in August, one month ahead of schedule, so we started making bales earlier than planned. The investment started to pay for itself right away in increased production volumes. We have been producing pulp at these new volumes for a couple of months now, and everything seems to be working beautifully,” Laaksonen says.

While the changes were in full swing, the worksite was like the Tower of Babel, with people of many nationalities working through the busiest period, including the mill's regular employees plus 1,000 contractors. Were there any communication or safety challenges to overcome?

“There was one accident involving an employee of an external contractor, who had to take sick leave. Occupational safety training was a major initiative for us. We provided training every day for all employees in many languages.”

Times are a-changing

Times have certainly changed since the day Laaksonen, now 61, first entered the mill site after finishing high school in 1973. As his first task, he was instructed to open up the “reject heads of the centrifugal scrubbing plant”. It never occurred to anyone to tell him what personal protective

“Thanks to this investment, the revamped mill now produces higher-quality pulp,” says General Manager Markku Laaksonen.

equipment, if any, he would need to wear to complete the job. Nowadays, nobody—not even the boss—can enter the mill site without safety boots, a high visibility vest, a hard hat and goggles.

With the investment completed on schedule as planned, the mill now produces more bleached birch and softwood pulp than ever before. This is a welcome improvement, since recycled paper is in short supply and there is high demand for pulp around the world. A growing volume of pulp is used to manufacture tissue paper and packaging paper, for which demand is increasing as online trading continues to grow. The growing middle class in China furthermore uses pulp in their household and hygiene products as well as in their printing and copy paper.

Pulp is in fact a high-tech product of the future that can be used as a raw material in an astonishing array of products from ice cream and ketchup to anti-caking agents. It can serve as a substitute for cotton in clothing and for plastic in packaging materials. Small wonder, then, that the General Manager looks to the future with optimism, and his enthusiasm has rubbed off on the mill workers too: pulp is clearly back in business.

Expanded debarking plant

Next we don our personal protective equipment and head to the debarking >>



Jouni Martikainen

Jouni Martikainen keeps a close watch on the new debarking line.

plant. Normally the noisiest part of the integrated mill site, the debarking plant is silent today because of a shutdown. There are no logs moving down the production lines, of which there are now two instead of just one. The new line, which debarks and chips birch wood, was built alongside the old one in June.

Clad in overalls, debarking plant manager **Markku Tamlander** and plant worker **Jouni Martikainen** have just replaced the chipper's blades. How do they see the investment as having impacted their everyday work? "Manufacturing is steadier now. There are fewer production interruptions. And it's more cost-efficient," Martikainen says.

The chipper gets blocked less often, for example. Another major benefit is the fact that one of the lines remains in use even if there are problems with the other. "We have higher production volumes and the end results are better quality," Tamlander says. And that, indeed, is what everyone wants: better products.

The quality assurance process in fact begins far away from the mill, in the forest, with the expert wood buyer who selects the logs. They mustn't be too thin or rotten, and they mustn't be allowed to rot by keeping them on the roadside or in a warehouse for too long.

This must mean that the piles of logs in the debarking plant's yard will

soon be fed into the chipper? "Yes indeed. And now that our production volumes have increased, we also buy more wood. We need an extra 800,000 cubic metres of wood per year," explains Laaksonen.

The pulp mill's investments are visible over an extensive area. The increasing demand for wood has sped up harvesting, which in turn brings more money to forest owners. The knock-on effects are extensive, not only regionally, but also nationally. Above all, the investment has had a positive impact on the atmosphere at work. "Pulp is valued more than before, which means manufacturing is profitable. The modernised pulp mill is an attractive workplace," says **Mikko Pajari**, supervisor of the pulp mill's morning shift. After all, why would anyone leave a job with solid long-term prospects?

Modernised softwood fibre line

We leave the debarking plant and head for the next improved site, the fibre line. A traffic sign points us in the right direction. We pass a huge white liquor tank to reach the control room, where we find several line operators closely analysing complex charts on their monitors. These charts tell them how much chlorine dioxide is being used, for example. This is an issue that is especially important to departmental supervisor **Mika Hohti**. Apparently, consumption has decreased, which seems like good news.



Matti Tikka

Energy efficiency has improved considerably. The mill self-generates higher volumes of heat and electricity, says Matti Tikka at the chemical recovery plant.

Hohti lists some of the improvements that have been achieved thanks to the modernisation of the softwood fibre line. “We replaced the old atmospheric diffuser in the brown pulp scrubber with a DD scrubber. As a result, pulp-scrubbing quality, runnability and capacity have improved.”

Another improvement is that branches are efficiently sorted and separated, which reduces the amount of rejects and impurities and improves output. What this means in plain English is that the mill gets more high-quality pulp from a smaller amount of wood. Bleacher **Aki Korpela** explains the secrets of pulp manufacture in metaphoric terms: “We make rice pudding out of barley porridge,” he jokes laconically. In essence, he’s right: when you make pulp, you remove the brown colour, or lignin. The final result is a white, porous substance that you can scrape out of the scrubbers,



Mika Hohti, Aki Korpela

Supervisor Mika Hohti monitors chlorine dioxide consumption. Bleacher Aki Korpela is on the right.

which look like large baking ovens. The difference between bleached and unbleached pulp is obvious from the two warm, wet, odourless samples we are handed from the birch line: one is brown and the other bright white.

In addition to the modernisation of the fibre line, the third significant improvement made at the plant concerns energy efficiency, as explained by operations manager **Matti Tikka** at the chemical recovery plant.

“Our energy utilisation is more efficient, and we are producing higher volumes of heat and energy. The mill’s self-sufficiency rate in terms of energy production has increased to more than 85%,” Tikka says.

More heat is generated because more black liquor is combusted in the recovery boiler. The excess heat is sold to the district heating network. The heat and the ‘green electricity’ produced from renewable raw materials support the Group’s sustainability-based business.

There is only one final place to visit: the drying machine. We walk another short distance in the clear autumn air to reach the most expensive investment, which is located on the paper mill side, on the site where paper machine no. 7 used to be before it was dismantled years ago.

Efficient drying machine

This time we enter a control room that is chock-full of bustling people. We watch the monitors and see how the pulp sheets move along the packaging line towards

robot claws. Bales ready for export are neatly packaged with wrapping and wire. Those without wrapping will be transported within Finland.

There was a clear need for a new drying machine, as the old one was already more than 50 years old and is currently being dismantled. “The pulp mill can now operate at full capacity even if the paper mill is at a standstill. Production had to be slowed down before, but now we are able to even out the consumption,” explains operating engineer **Jukka Flinkman**.

There are other benefits too: the current machine efficiently cools down the pulp web, which reduces the yellowing tendency of the pulp, which can mar the brightness of the end result. The bales also look more attractive now, which is important to customers.

Our tour is nearing its end. We pass from the control room to the warehouse from where the pulp is sent to end customers to be processed further. As steam rises from the water in the wastewater treatment plant, forklifts scurry about and trucks with licence plates from several countries are being loaded with brilliant white pulp bales. A train carriage has just been loaded: most of the pulp travels to customers by train.

The autumn day draws to an end. The evening shift takes over from the morning shift. The pulp bubbles away, and the paper machines roar. All is well at the Kymi integrated mill site. ○



Paper

says it all for rtv media

In times when digital and printed media complement each other more than ever, German publisher rtv media trusts in UPM to create the haptic and emotive experience that sends the right signals to its readers.

For more than 50 years, the rtv TV guide has been an extremely popular magazine supplement with more than ten million weekly readers. The key to its long-term success is not only its well-edited content, but also the high quality of the paper on which it is printed.

The same applies to Land & Leute, a monthly supplement introduced by rtv media in 2013. Distributed in high-circulation regional papers, the supplement has quickly established itself as Germany's biggest country lifestyle title. Offering an interesting package from exclusive lifestyle articles and useful recipes to practical tips for the house and garden, Land & Leute is exactly what audiences are searching for in print media. Readers scarcely notice that they are holding a supplement rather than an actual magazine – and this is reflected in the look, feel and quality of its paper.

Fingertips don't lie

rtv media has relied on UPM's quality products for decades. As a leading paper expert, the Finnish company understands the varying needs of its clients and offers suitable solutions that guarantee not only premium quality but also sustainability. Caring for the environment as part of its basic philosophy, UPM truly believes that less really is more and uses resources efficiently to produce papers with added economic and ecological value.

Last summer rtv media decided to switch Land & Leute's paper to UPM Smart. The haptic experience is now better aligned with the reader's emotional experience, as the higher-quality paper reflects the exclusive lifestyle image that the magazine seeks to convey.

Emotions are key, agrees **Jan Reichold** from the board of rtv media group GmbH: "Reaching our audience on an emotional level is one of our most important aims when it comes to print media. The paper is not only our printing substrate, but it also conveys and creates an experience and memory that lasts."

Digitalisation hasn't changed any of this. On the contrary, haptics and emotional perception are becoming all the more significant in the world of print.



The perfect cost match

With the switch to UPM Smart, Land & Leute not only wanted a high-performance printing paper with a particular feel and colour, but also a substrate that is technically reliable throughout the production process.

"UPM Smart is ideal for lifestyle magazines like Land & Leute as it offers the perfect combination of brightness, opacity and affordability," says **Atte Lindström**, Director of Technical Sales Magazine Publishing & Advertising at UPM.

The paper stands out in being exceptionally efficient and environmentally friendly, as it is produced from renewable raw materials. "A mass media publication like the rtv TV guide needs to be printed in an economically efficient way. That's why clients trust UPM Eco paper. Its lower surface weight leads to significant cost savings – an ideal solution for clients in this segment," Lindström explains.

Both the TV guide and Land & Leute are printed in Nuremberg by Prinovis, a close partner of rtv media for many years. "Both magazines are printed in rotogravure. This method is popular for mass media products since it is stable and precise while being cost-efficient due to the large width of the paper web, which leads to a considerable productivity increase," explains **Lars Meusburger**, Division Manager Purchasing Department at Prinovis.

With its broad product portfolio, UPM offers the best papers for every need, whether intelligent alternatives for demanding print jobs or cost-efficient solutions for mass media products. Whatever the image they seek to convey with the paper they choose, UPM helps clients like rtv media turn consumers into loyal readers. ◉



TEXT VESA PUOSKARI PHOTOGRAPHY UPM

Forestry finds fertile soil in Uruguay

UPM has been planting eucalyptus in Uruguay for a quarter century. Cultivating gum trees for pulp production is a task requiring commitment and long-term R&D.

Eucalyptus plantations were first established in Uruguay in the early 1990s after new legislation was passed to boost the forest industry.

Mats Backman, Director of Technical Customer Service at UPM Pulp, was involved in founding the very first plantations in Uruguay in a joint project between Kymmene Oy (today part of UPM) and oil supermajor Shell. Renewable energy production was top of Shell's agenda, while Kymmene was eager to solidify its position in the pulp market.

"Eucalyptus trees are mature

for harvesting in about ten years, so it was absolutely crucial to start these plantations in order to secure cost-effective raw materials and the international competitiveness of the forest industry," says Backman, recalling the early days.

Plantations of this kind were then entirely new to Uruguay. The first task was to find eucalyptus species suited to local conditions. Specimens were brought in from as far afield as Australia and South Africa, and trial plantations were set up to identify lands where the trees would be most likely to thrive.

"We have continued fine-tuning the species chosen for cultivation through systematic breeding. Here our ultimate goal is to ensure that our pulp remains as uniform as possible, as this is crucial for our customers' production processes," Backman adds.

Output doubled

The plantations are managed by Forestal Oriental, a UPM-owned company active in Uruguay since



Mats Backman

1990. The company currently owns 230,000 hectares of land, 140,000 hectares of which is planted. The rest is either conserved or used for purposes such as cattle grazing.

Ricardo Methol, Technical Development & Planning Manager in charge of UPM's plantations, confirms that tree breeding efforts aim both to increase the productivity of the plantations as well as improve the quality of their wood fibre.

"The fibre should be as dense as possible in order to maximise wood use in pulp production. We have even doubled our yield per hectare in some areas, which is an extremely positive result."

Keeping up the same momentum in the future will be a challenge, as global warming and climate change are having a significant impact on growth conditions.

"Some areas have been rainier than usual, while others have been drier and colder than normal. Our mission is to breed seedlings that are able to adapt to constantly changing conditions," says Methol.

"In the meantime, our rigorous R&D is a visible token of our vision, goals and commitment in the long term," he adds.

Planet watch

From the very outset, UPM Forestal Oriental has been evaluating and monitoring the plantations' impact on the environment in co-operation with research facilities, universities and environmental organisations.

"This long-term monitoring proves that we are able to maintain extensive plantation operations in a sustainable way," says Methol.

UPM has taken its eco-commitment one step further by establishing a network of conservation areas covering approximately 6,000 hectares.

"We have set up nature reserves

on our company-owned lands, which is rare for private companies in Uruguay. Environmental organisations are also actively involved in land management planning in these conservation areas."

In autumn 2013, UPM and Vida Silvestre Uruguay signed an agreement to preserve biodiversity on UPM-owned lands. This agreement is the first of its kind in the country.

Methol notes that the company's goal is to optimise land use both in conservation areas as well as on plantations. "We are investing a lot of resources in land management planning by mapping out areas for plantation and conservation in co-operation with our partners."

UPM's commitment to operating responsibly is testified by the fact that all its plantations are FSC and PEFC certified.

UPM is also an active member in the WWF's New Generation Plantation Project (NGPP), which promotes key features of healthy, diverse and multi-functional forest landscapes.

Giving back to the community

Across the community, too, the forest industry has generated new prosperity by creating new jobs and business opportunities in the countryside.

"The forest industry has improved employment prospects for women in particular, for whom jobs have been in short supply in rural areas. In our nurseries, for example, 60 per cent of personnel are women," says Foundation Manager **Magdalena Ibanez**.

In addition to creating new jobs and economic growth, UPM has mentored local communities through



Magdalena Ibanez

its UPM Foundation.

Established in 2006, the foundation's mission is to co-operate with local communities especially in the fields of education and training.

"In rural Uruguay, some children finish school as early as age 12, which makes it difficult for them to enter professions that require special training. Through the UPM Foundation, we have been able to extend their schooling and thus improve their employment prospects in the future," she adds.

So far, the Foundation has worked together with 96 communities, and more than 300,000 people have benefited from its co-operative projects. >>

RECOGNITION FROM EXEMPLARY FORESTRY

UPM has received recognition from the Food and Agriculture Organization of the United Nations (FAO) for its exemplary forest management practices in Uruguay.

The acknowledgement followed a thorough investigation of social, economic, environmental and technical aspects of the company's production chain by the panel of experts.

Sustainable forestry is one of UPM's key environmental responsibility areas, and biodiversity is one of the main environmental drivers in the advancement of sustainable forest management practices.

In Uruguay, UPM's biodiversity projects include a conservation programme for Yatay palm trees growing on UPM Forestal Oriental's land and a programme to manage native grasslands with the goal of conserving the Capuchino bird.

Synergy with cattle farmers

The forest industry works in symbiosis with traditional forms of farming in Uruguay. The plantations offer income for agriculture, while the forest industry is expanding its planted areas with the support of farmers.



Cattle breeder and farmer Roberto Symonds has planted 150 hectares of eucalyptus on his farm since 2009. He sees the plantations as a great way to supplement income from traditional farming.

“The planted forests provide shelter for the animals. Our plantations are mainly located in areas that are of little use for cattle breeding or farming. Diversification is another incentive, as the demand for wood is increasing, which raises the value of the plantations,” Symonds explains.

The Uruguayan Forestry Act was passed in 1987 to promote forestry through loans and financial support. Since the law was enacted, the area covered by plantations has been increasing at a steady pace. Plantations currently cover one million hectares, which accounts for approximately six per cent of agricultural land in Uruguay.

Symonds has planted both *Eucalyptus grandis* and *Eucalyptus dunnii*. He notes that the soil and climate in Uruguay are highly suitable for tree plantations.

“The significance of the eucalyptus plantations and the forest industry is constantly increasing, and not just for agriculture but also for the national economy as a whole. The plantations are definitely here to stay,” he adds.

Landowners in on the action

UPM has been co-operating with private landowners since 2005 within the framework of the FOMENTO Programme. Today, approximately one third of the plantations managed by UPM are located on privately owned land.

“This is an important trend in many respects, as this co-operation improves social well-being and ensures that the benefits are shared with the local community. Furthermore, we are able to plant trees in areas to which we would otherwise have no access,” says Ricardo Methol from UPM.

Under the FOMENTO Programme, UPM Forestal Oriental supplies the tree seedlings and is responsible for planting and harvesting the trees later on.

“The contract covers two fellings performed in ten-year cycles to which UPM has right of first purchase. This is a profitable system for the producer, as it guarantees that they will be able to sell their produce at the market price,” Symonds explains.

“Co-operation with UPM has been very smooth so far, and we have been able to come to a good mutual compromise in all issues. Our plantations are also located relatively close to the mill, which gives us a significant advantage.” ◉

UPM Fray Bentos mill going strong

Most of the harvest from UPM's eucalyptus plantations in Uruguay is used to make pulp at the Fray Bentos mill.

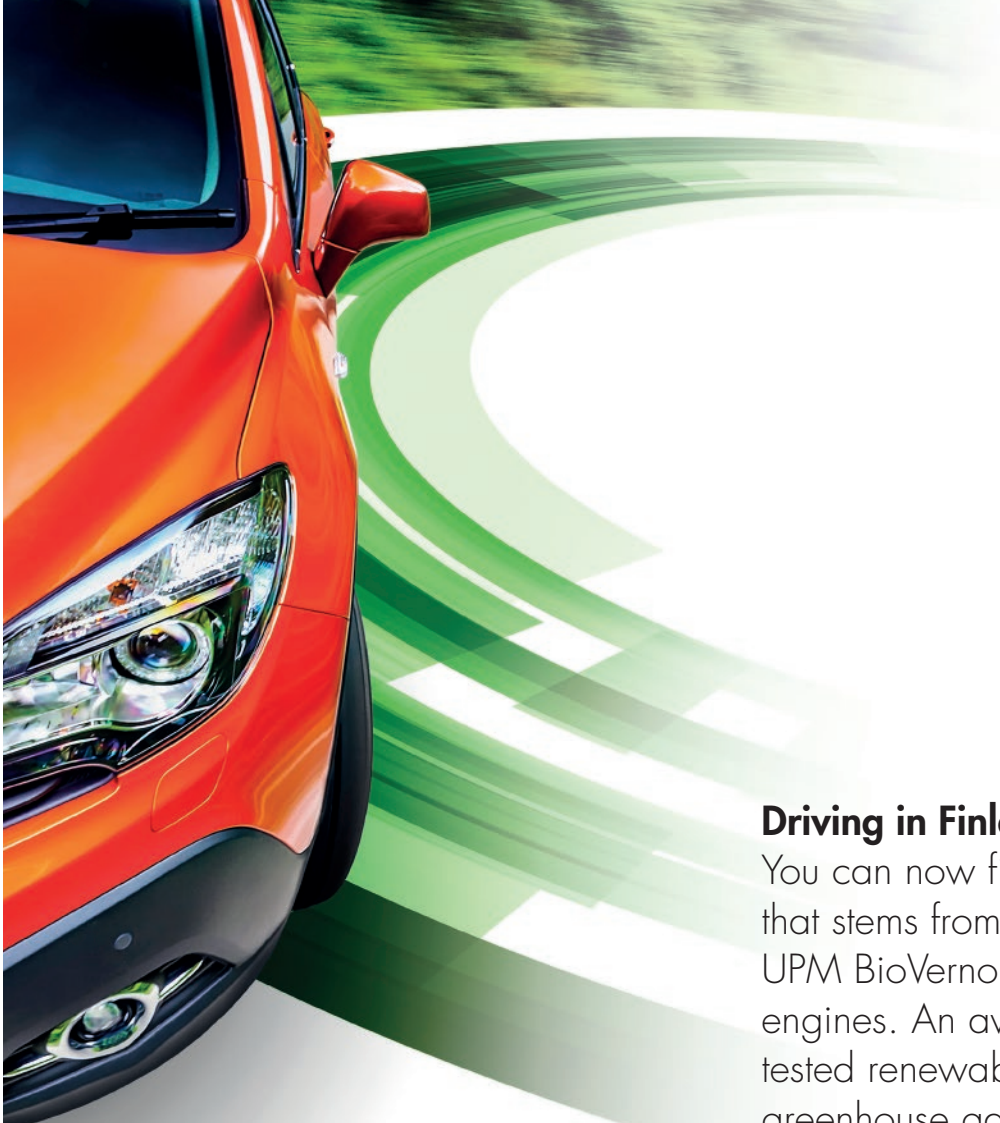
“The Fray Bentos mill adheres to very strict targets with regard to environmental emissions, occupational safety and production quality. Compliance is evaluated constantly,” says **Marcos Batteggazzore**, R&D Director at UPM Pulp.

“The mill's performance has been excellent and our expectations have been exceeded in every respect. Currently, we are in the process of increasing annual pulp production capacity to 1.3 million tonnes, which is the main objective of UPM in Uruguay.”

“The public is openly informed about the mill's environmental performance. After eight years of operation, the empirical data on our operations proves that the Fray Bentos mill is one of the best pulp mills in the world. Thanks to this transparency, Uruguayans now have a very positive attitude to the forest industry in general,” Batteggazzore says.

The customers, too, are happy with the quality of production.

“What matters most to our customers is that we are able to produce pulp of uniform quality. This ensures more predictable, reliable processes, which allows our customers to optimise their production. We have made notable progress in this respect,” he concludes.



Driving in Finland?

You can now fill up your car with diesel that stems from the Finnish forest.

UPM BioVerno is suitable for all diesel engines. An award-winning, thoroughly tested renewable diesel that cuts down greenhouse gas emissions.

Powered by UPM BioVerno

UPM is the frontrunner of the new forest industry. UPM BioVerno is based on UPM's own innovations. It is derived from tall oil, a residue of our pulp production. UPM BioVerno is produced in Finland completely outside the food value chain.

UPM BioVerno is now available from St1 and ABC service stations.

More fuel for thought at www.upmbiofuels.com

#UPM #BioVerno

UPM BioVerno

