

UPM'S STAKEHOLDER MAGAZINE 1/2015

Biofore



**CELEBRATING
FIRST OF A KIND
BIOREFINERY**

**FROM WOOD
TO WHEELS**

**DESIGNING
THE PERFECT
PRODUCT**



DRIVING **CLEANER** **TRAFFIC**

with **UPM** BioVerno

UPM BioVerno is like no other fuel on the market.

Produced from the residue of the pulp making process it is 100% renewable – and made entirely outside the food chain.

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UPM BIOFUELS



BIOFORE IS THE UPM'S
GLOBAL STAKEHOLDER
MAGAZINE



UPM – The Biofore Company

UPM combines bio and forest industries. We are building a sustainable future in six business areas.

In 2014, UPM's sales amounted to EUR 9.9 billion. UPM has production plants in 13 countries and a worldwide sales network. UPM employs around 20,000 people. UPM's shares are listed on NASDAQ OMX Helsinki. At the end of 2014, the company had about 90,000 shareholders.

Investing in a future fuelled by Biofore innovations

Did you know that burning of fossil fuels produces over 20 billion tonnes of carbon dioxide per year? And that over eight million tonnes of plastic waste find their way into the world's oceans each year? And that every single piece of oil-based plastic ever made still exists?

There can be only one conclusion: the world needs sustainable, responsible alternatives to non-renewable fossil-oil based fuels and materials.

We at UPM believe in a future that is characterised by sustainability and resource efficiency.

The cornerstones of our Biofore strategy are the use of recyclable and renewable wood biomass in an innovative and efficient way. Maximising material efficiency and the lifecycle of all our wood-based raw materials is an important goal of our businesses – from pulp and paper to plywood, label materials and innovative biomaterials. The overall objective is to achieve more with less.

In this issue of Biofore magazine we highlight our investment in the world's first biorefinery producing wood-based renewable diesel. The biorefinery in Lappeenranta, Finland, is a fine example of utilising resources efficiently. The innovative UPM BioVerno diesel is made from crude tall oil which is a residue of the pulp making process.

UPM is a frontrunner in the transformation of the modern forest industry, and in integrating bio and forest industries. The stories in this magazine give you examples of the most recent developments fuelled by Biofore innovations.

I hope you enjoy reading them!

Elisa Nilsson
Vice President,
Brand and Communications, UPM



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UPM BIOFUELS



THE FUEL OF
THE FUTURE IS
ALREADY HERE.

CONTENTS

03 EDITORIAL

04 FUEL OF THE FUTURE

06 CONTENTS

08 IN TIME

10 CELEBRATING FIRST OF A KIND BIOREFINERY

The new UPM biorefinery in Lappeenranta hosted a special visit from the Finnish presidential couple and King Carl XVI Gustaf and Queen Silvia of Sweden.

12 FROM WOOD TO WHEELS

16 SUITABLE FOR ALL DIESEL ENGINES

UPM BioVerno is a more sustainable alternative to fossil diesel fuels. It is compatible with all diesel engines, just like traditional diesel.

22 BIOFUEL LEGISLATION – WHAT’S THE EU’S NEXT MOVE?

24 STILL WASTED

ICCT Fuels Program Lead Chris Malins looks at where we stand one year after the release of the ‘Wasted’ report. How far has Europe come in promoting the use of biomass resources to meet transport fuel demand?



UPM BioVerno is a revolutionary green diesel made from domestic pulp residues. We hear the story behind its creation from key players who brought this new-generation biofuel to Finnish fuel tanks.

22

Finnish MEP Nils Torvalds share the latest twists and turns in EU biofuel legislation. Proposed amendments are pushing a shift towards second-generation non-food raw materials.



Heavy goods stay snug in the back of any trailer with UPM Plywood’s new WISA-TopGrip. The anti-slip floor covering minimises the risk of injury and reduces waste by eliminating the need for disposable mats.

26 DIESEL MEETS ITS MATCH

Tests performed by the VTT Technical Research Centre of Finland show that UPM BioVerno matches regular diesel in all key respects but one: it leaves a significantly smaller carbon footprint.

28 SPENDING MONEY TO MAKE IT GROW

The only way to make money is to spend it in the right places. UPM plans to invest €680 million in major projects in the biofuels, self-adhesive label paper and pulp segments between 2013 and 2016.

32 THE MANY FUTURES OF PAPER

Paper isn't dying – it's gearing up for a second life at the hub of the bio-based industry. Bold young researchers explain why thinking out of the box is a mission-critical for renewal in a mature industry.

36 DESIGNING THE PERFECT PRODUCT

It's certainly no coincidence that products like the Biofore Concept Car are sustainable to the core. Every detail of every UPM innovation is the fruit of proactive and painstaking product stewardship.

38 LABEL MARKET LIFTS OFF IN MEXICO

Service, service, service – that's the key to success in competitive Mexico, where UPM Raflatac has opened a service terminal in order to tap into this dynamic, growing market for labelstock.

40 STAY SAFE AND KEEP ON TRUCKING

42 SEEING THE FOREST FOR THE TREES

With massive investments under way in pulp production, private forest owners will have to increase their output by ten million cubic metres per year in order to satisfy skyrocketing demand for pulpwood.

44 STARTS BEAUTIFUL, STAYS BEAUTIFUL

It looks like hardwood yet is designed to tough out any conditions – without any maintenance worries for the homeowner. UPM ProFi Veranda premium composite decking offers sustainable style that lasts.

46 SALUTING OUR PARTNERS IN SUSTAINABILITY

UPM Raflatac's Label Life Awards give recognition to suppliers who show exemplary commitment in promoting sustainability. Ricoh Industrie France took home first prize this year.

48 THE PAYOFF OF DOING GOOD

UPM is among the first companies to be listed on Nordea's Nordic Stars Equity Fund. The portfolio is targeted at investors looking for companies that combine sound ethics and smart business.

50 MAKING A MARK IN FOOD LABEL SAFETY

As one of the world's first labelstock producers to gain ISO 22000 food safety certification, UPM Raflatac leads the industry in producing safe labels for food products.



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The Biofore
Company

A PERFECT MATCH

UPM has launched a new, comprehensive paper range for digital printing. Covering the widest possible range of digital end-user applications, UPM Digi papers come in a variety of tailored categories designed to fit a specific purpose and press. Enabling users to take full advantage of the possibilities of digital printing, UPM Digi papers are available in both wood-free uncoated (WFU) and wood-free coated (WFC) options, and in a wide spectrum of basis weights ranging from 80 to 350 g/m².



**You can now read
UPM's Biofore Magazine
and many more interesting articles
related to the innovative Biofore business
in our new digital publication at**

www.upmbiofore.com



Work-related accidents significantly reduced

UPM has significantly reduced work-related accidents with a three year program called "Step Change in Safety 2012-2014". UPM's lost time accident frequency (LTAF) has decreased by 70% from 15.2 in 2012 to 4.4 in 2014.

The Step Change in Safety 2012-2014 initiative engaged all UPM employees in a joint mission to improve the company's safety culture and safety performance. The pervasive program renewed the foundations of safety work by shifting focus to preventative measures, such as proactive risk identification and management. Strong management commitment and active participation of employees and contractors have been the keys to success.

As a result, UPM's global LTAF decreased by a total of 70% from 15.2 in the beginning of 2012 to 4.4 by the end of 2014. The total number of lost time accidents globally decreased from over 550 in 2011 to 155 in 2014.

New Regional Technological University (ITR) in Fray Bentos

UPM and the Technological University of Uruguay (UTEC) have signed an agreement to build a new Regional Technological University (ITR) in Fray Bentos to advance technical skills and engineering expertise in rural Uruguay. The regional university will specialise in mechatronics, renewable energy, transport and logistics.

The region is home to a community of over 4,000 students who will now be able to complete university studies without having to leave their hometowns. The construction of the Fray Bentos ITR is estimated to take 14 months.



THE PAPER YOU CHOOSE IS A BRAND STATEMENT

This issue of the Biofore magazine is printed on UPM Valor. It's a game-changing paper and an excellent example of our innovative product development, striking the perfect balance between consistent paper quality and sound environmental performance.

UPM Valor combines high gloss, optimum thickness, bulk, stiffness and opacity. The paper is light, yet has the same properties as heavier grades and can substitute for papers up to 15% heavier in basis weight. Thanks to its unique properties, UPM Valor offers direct savings in paper consumption as well as in mailing and delivery costs.

UPM Valor consumes less raw materials, water and energy in production. Like all UPM papers, it's renewable, recyclable, biodegradable and can be made from certified raw materials.

The paper you choose for your publication is a simple but powerful way of reinforcing your brand identity and the values you wish to convey. Whatever your requirements, we are happy to assist you in choosing the paper with the right look and feel for your desired effect.

www.upmpaper.com

UPM has received Industry Leader position with Gold Class Distinction in the RobecoSAM's annual Sustainability Yearbook.

The Sustainability Yearbook lists the world's sustainability leaders and ranks companies into gold, silver and bronze class on the basis of their performance in the RobecoSAM's annual Corporate Sustainability Assessment (CSA). The CSA is an analysis of the economic, environmental and social performance of the world's leading companies, assessing issues covering climate change strategies, supply chain standards, labour practices, corporate governance and risk management.

For each industry, the company with the highest score is named as the RobecoSAM Industry Leader. The leading company is considered to be best prepared to seize the opportunities and manage the risks deriving from economic, environmental and social developments.



The Finnish president and his wife and the Swedish royal couple listen to the story of UPM BioVerno.



Celebrating first of a kind biorefinery

– Lappeenranta biorefinery hosts royal visit



UPM's new Lappeenranta biorefinery welcomed high-profile VIP guests early this March. King Carl XVI Gustaf and Queen Silvia of Sweden visited the refinery together with Finnish president Sauli Niinistö and his wife Jenni Haukio. The visit was hosted by UPM's Board Chairman Björn Wahlroos and CEO Jussi Pesonen.

A visit to the biorefinery was included in the royal itinerary in recognition of UPM's unique achievement. Opened in January 2015, it is the world's first biorefinery to produce renewable wood-based diesel, UPM BioVerno.

"UPM has made industry history in Lappeenranta. Having two heads of state visit us is a fantastic public acknowledgement of the work being done here – and of our eagerness to reinvent our business," says **Jussi Pesonen**.

After the official visit, UPM arranged a special reception to thank its partners for their support. The celebrations continued later in the evening in the UPM Kaukas club room, which had been transformed into the 'UPM BioVerno club'. ◉



From left: Harri Tuomaala (St1), Sari Mannonen (UPM), Marko Snellman (UPM), Mika Anttonen (St1), Petri Kukkonen (UPM) and Mika Wiljanen (St1) at the UPM BioVerno club.

FROM WOOD TO WHEELS

UPM BioVerno is a brand-new renewable diesel that has been produced in Finland from mostly domestic raw materials. It can be used directly in all diesel engines.

The biofuel is based on UPM's own innovations; it is derived from crude tall oil, a residue of pulp production. Because of its significant environmental benefits, UPM BioVerno is a responsible choice.



We introduce key players in the chain that brought UPM BioVerno from Finnish forests to fuel tanks.

- 1 What has been your role in the project?
- 2 How does it feel being part of the chain?
- 3 Why is Finnish renewable diesel such an important product?
- 4 How does the product benefit end customers?

Karoliina Hiironen

Process Engineer, UPM Biofuels

1 I joined UPM as a Process Engineer early in 2013. I was one of the first people to join the biorefinery's production organisation. Initially I worked on the LUNA project, attending meetings, discussing the operation of the system and commenting on control screens and operating instructions. At that time, we also began recruiting production staff and organising staff training. When the plant was commissioned, I was responsible for the start-up of the hot oil boiler and the pre-treatment of the crude tall oil.

2 Being part of the project and the production organisation during the construction and commissioning of the plant has been very interesting. I have learnt a lot about commissioning – there are so many more issues to consider than with a plant that is already up and running. The work has been challenging and even difficult at times, but we are constantly making progress, one step at a time.

3 Forests are Finland's main renewable resource, and all forest-based products are important to the Finnish economy. Demand currently exists in Europe for renewable diesel. Finland benefits from the fact that our biofuel can be produced on home turf. In addition to providing jobs and tax revenues, the new technology has brought us expertise that will create new opportunities in the future.

4 UPM BioVerno is a high quality renewable diesel with lower emissions than fossil fuels. Customers don't have to wonder whether the fuel is suitable for their diesel car, as BioVerno has been proven to suit all diesel engines. By filling their tanks with UPM BioVerno, a fuel produced in Lappeenranta using domestic raw materials, customers can choose to support Finnish jobs.

>>



Marko Snellman

Commercial Development Manager, UPM Biofuels

1 I have been responsible for negotiating sales contracts with our customers. There has been a high level of interest in the product since the very beginning – in that respect the negotiations have been very rewarding. That said, the negotiations began before we even launched production, so the process required a high level of mutual trust.

2 It has been a great experience contributing to the creation of a new and unique product. My job involves close contact with customers, and it has been important to make sure that the product's properties meet customer needs and benefit the end customer. It is extremely interesting to be part of creating a new business.

I previously worked in a commercial role in the oil industry, so I am familiar with the traditional oil market. Biofuels were new to me, so I have learnt a great deal at UPM.

3 The product is a quality advanced biofuel that is suitable for all diesel engines. It reduces traffic emissions and increases the range of advanced biofuels on the market.

4 The product is significant to our fuel manufacturing customers, as it enables them to produce fuel mixtures in a flexible manner without the need to make changes to the existing distribution infrastructure. UPM BioVerno also has better properties than traditional biofuels. Numerous engine tests and fleet tests have proved that our biofuel works exactly like a traditional diesel fuel. The results of the tests have been excellent and in line with our expectations.



Henrikki Talvitie

CEO, NEOT (North European Oil Trade Oy)

1 As a major Finnish wholesale distributor, North European Oil Trade Oy sees it as its responsibility to provide UPM with the best possible channel for selling biofuel to Finnish drivers. We have been involved in the project from the very beginning and worked with UPM to find the optimal and most cost-efficient way of providing end customers with Finnish wood-based diesel.

2 Part of our company strategy is to ensure self-sufficiency in the supply of traffic fuels, including biofuels, both today and in the future. In addition to investing in production through our owners, SOK and St1, our goal is to support Finnish biofuel projects that use waste or residues as raw materials. Finding common ground with UPM in a project of national significance has felt particularly good.

3 All Finnish biofuels and traffic fuels benefit the economy, as every litre produced in Finland reduces the net import of energy. Renewable liquid biofuels are a modern solution that suits the current infrastructure and helps Finland achieve its renewable energy goals.

4 The availability of renewable Finnish biofuels ensures that end users can choose a product that is sustainable, ethical, and domestic, yet also competitive.



Harri Tuomaala

Marketing and Communications Director, St1

1 We have worked with UPM to create an end product and develop its story and marketing communication concept in the lead-up to the product launch.

2 Our collaboration has run smoothly from the start. The enthusiasm and energy of the entire team has been visible in our work throughout the project. Each team member has felt that we are creating a unique and innovative Finnish success story. As the members of the team all come from different backgrounds, the project has also helped us to take on new perspectives and learn new skills.

3 Renewable traffic fuels, including renewable diesel, are important to Finland for three reasons. Firstly, they reduce the need to import energy, which benefits the Finnish economy. Secondly, renewable fuels help us achieve our goal for 2020, when renewable energy should account for 20% of traffic fuels. Thirdly, UPM's high-tech renewable diesel is a perfect match for diesel vehicles that are constantly being developed and have exacting requirements in terms of fuel quality.

4 When UPM BioVerno is combined with St1's high-quality Diesel plus product, a large number of end customers can benefit. The high cetane number (>60) guarantees outstanding ignition properties and maximum engine performance.

By using UPM BioVerno, all Finnish diesel car drivers can benefit from a world-class innovation and reduce Finland's import energy costs. What's more, each litre of Diesel plus containing UPM BioVerno helps us to reduce fossil CO2 emissions. UPM BioVerno is clean energy from Finnish forests.




Jaana Särkisilta

Sales Director, Fleet Sales, Bilia Oy Ab

1 I provided the car dealer's perspective. The majority of Bilia's business customers opt for diesel Volvo models thanks to their improved engine power and reduced CO₂ emissions. The new Volvo DRIVE-E powertrains represent cutting-edge technology, and their CO₂ emissions are at a level complying with the standards of most businesses. I believe that a large proportion of our customers will use UPM BioVerno to fuel their Volvos.

2 The story of UPM BioVerno, making fuel from pulp production residue, is so fascinating that it is both a pleasure and an honour to be part of it.

3 We are all responsible for our environment. Environmental matters are taken very seriously in vehicle manufacturing and recycling, and it's great that we can also reduce our environmental footprint through our choice of fuel.

4 Volvo's customers are environmentally aware and expect their vehicles to be fuel-efficient and environmentally friendly, at no cost to their driving pleasure. UPM BioVerno meets all these expectations. 

TEXT VESA PUOSKARI, ANTTI YLITALO

PHOTOGRAPHY SAMI KULJU, MARTTI JÄRVI

SUITABLE FOR ALL DIESEL ENGINES



UPM BIOVERNO IS A MORE SUSTAINABLE ALTERNATIVE TO FOSSIL DIESEL FUELS. IT IS COMPATIBLE WITH ALL DIESEL ENGINES, JUST LIKE TRADITIONAL DIESEL.

IN ADDITION, UPM BIOVERNO IS SEAMLESSLY COMPATIBLE WITH THE EXISTING DISTRIBUTION INFRASTRUCTURE.

CLEAN DIESEL FROM FINNISH FORESTS

Premium fuel producer St1 partners up with UPM to enhance its 'Diesel plus', a new and improved renewable fuel pairing low carbon with high efficiency.

The renewable diesel produced by UPM aligns perfectly with St1's strategy to become a leading producer and supplier of low-carbon, ethical energy, affirms CEO **Mika Wiljanen**.

"We produce renewable ethanol fuel from leftover food and waste, and we now make our diesel fuels using UPM's tall oil based product. Our goal is to sell less and less fossil fuels, so the renewable diesel manufactured by UPM fits our overall strategy beautifully."

In addition to being environmentally friendly, a fuel must also meet customers' quality requirements. Wiljanen confirms that the technical properties of UPM's renewable diesel make it an excellent component in St1's Diesel plus.

"Diesel plus has a cetane number over 60, whereas the corresponding figure for ordinary diesels is somewhere between 51 and 55. The cetane number indicates the combustion speed of diesel fuel — the higher the

number, the shorter the ignition delay, which increases the power of the engine," Wiljanen explains.

The product must also be available at a competitive price – not to mention the key importance of protecting the environment by cutting fossil CO2 emissions.

The new diesel will be available at every St1 station from the beginning of May.

"I am convinced that Finnish consumers will welcome a product that offers all these benefits. In general, the Finns have a positive attitude towards renewable fuels, since we love nature and want to keep it as clean as possible."

Meeting of minds

Wiljanen has nothing but praise for St1's collaboration with UPM.

"It has been a pleasure to see how professionally UPM's experts have developed their product, while being incredibly eager to learn how the



Mika Wiljanen

>>



aftermarket works. During development, we had a number of discussions on how we can present the benefits of the fuel to consumers in our premium diesel marketing.”

Renewable fuels also benefit the national economy.

“UPM BioVerno is extremely important to us, since it has been developed and manufactured in Finland. Fuels manufactured from domestic raw materials create new jobs and improve the trade balance, as it reduces the need to import fuels. This fact alone is very significant for us.”

Wiljanen predicts steady growth in demand for biofuels.

“Finland is committed to meeting the EU goal of biofuels making up 20% of fuel consumption in traffic by 2020. We need to harness every solution imaginable to meet this goal,” states Wiljanen.

Rapid growth in the world population is pushing up demand for energy to maintain standards of living, he adds. “Moreover, consumer choices are increasingly driven by the desire to take the environment into account. As a result, the demand for renewable fuels will certainly rise in the future.”

BIOFUELLING THE WHEELS

Chatting with Biofore magazine at the World Bio Markets events in Amsterdam is a man with firm faith in the future of liquid fuels: John Cooper shares his helicopter view of what’s happening in the industry.



Though many are predicting that electric cars will soon take over, **John Cooper**, BP’s Director of European Biofuels Strategy, sees liquid fuels – including advanced biofuels – as having a long-term future in road transport.

“We recognise that the combination of biofuels with fossil fuels and efficient vehicles that use internal combustion engines are already a lower carbon alternative and very cost efficient – and can bring amazing value to society.”

Cooper acknowledges that electric vehicles have a role, but not on the wide scale that is often envisaged due their ongoing reliance on incentives at high cost to the taxpayer. There is also no viable electricity solution yet available for the heavy-duty road transport sector.

“We see biofuels, and liquid fuels in general, as the most effective way of directly reducing the carbon intensity of transportation fuel for some decades to come. Liquid fuels generate a lot of revenues to governments through the very high value that they add, which allows high taxes to be placed on them. The alternatives that we see are completely incapable of doing that.”

Better fuel mix

BP has a long history of expertise in fossil fuels reaching back over 100 years. The biofuels business has also been part of the company’s portfolio for about a quarter of a century. Currently biofuels are integrated into BP’s downstream business and service-led arm. In Europe, the USA and many other markets around the globe, there is a growing requirement for biofuels to be sold as part of the offering.



“We see biofuels, and liquid fuels in general, as the most effective way of directly reducing the carbon intensity of transportation fuel for some decades to come.”

John Cooper

Cooper is responsible for bringing biofuel strategies to various markets, which requires careful planning from a long-term perspective. One key challenge is shifting the sourcing of raw materials to sustainable non-food sources.

“Developing a longer-term strategy requires discussion of multiple arrangements with a large number of companies. We need to look at how we can jointly make commitments and investments to bring better biofuels to the fuels mix.”

This is where companies like UPM, who produce renewable diesel from non-food materials, enter the picture. BP supports the movement towards these second-generation biofuels.

“Absolutely, we are interested in sourcing this material for our business.”

In Europe there has been a lot of talk about indirect land use change (ILUC) related to biofuel production. The increasing global demand for biofuels is driving farmers around the world to abandon food crops in favour of biofuel production. This consequently produces more carbon emissions.

Cooper recognises that there can be a role for existing biofuels, but the focus from now on, both in terms of the technology and the volumes that go into the fuel, should be in non-food based biofuels that are produced from wastes and residues.

“We think the focus should now change to how we support the development of the advanced biofuels sector. How do we provide a long-term framework policy that gives reliable pricing and demand signals, so that investors can make commitments and plans?”

>>

THIRST FOR ENERGY



BP announced their new energy outlook for 2035 in February. The report projects that energy demand will be driven by ongoing economic growth in Asia, particularly in China and India. Global demand for energy is expected to rise by 37%, or by an average of 1.4% per year, with demand for oil increasing by approximately 0.8% annually. Based on BP's outlook, renewable energy sources, including biofuels, will rapidly gain share in the future.

“The work that we've done is a projection rather than a prediction. We're not able to predict what policy will be in place in the next 10-20 years, so we have made certain assumptions about what would happen in certain markets,” says John Cooper.

The report foresees demand for natural gas growing fastest of all fossil fuels, increasing by 1.9% a year through to 2035, led by demand from Asia. With a growing number of oil and gas suppliers active in the USA and with demand decreasing in the USA and Europe due to improved energy efficiency and lower growth, energy flows will increasingly shift from west to east as strong economic growth continues in Asia. There are similar drivers also in biofuels.

“While we do not want to get into a discussion on what exactly will happen in Europe or in the USA, what we can say is that we believe that the use of biofuels will continue to grow. In Europe the focus is on the next generation of biofuels from non-food sources, but we still expect to see growth in other types of biofuels as well, and that growth will happen in Asia and Brazil.”

Policy headwinds

The road ahead is by no means easy or smooth for the biofuels business. There are many obstacles the business is facing now and will continue to face in the near future.

Policies around the biofuels business have changed repeatedly. There have been surprises both in high-level and detailed-level political decisions, which have resulted in mechanisms that vary from market to market.

“We need policy-makers to recognise the financial influence that they have on the market. This business needs long-term and stable policies so that the assumptions that were used to make business cases can have a long-term life.”

Lately also the drop in crude oil price has affected the liquid fuels market. BP has estimated that they expect to see lower-level oil prices for up to three years.

“I think many companies are putting in effort to try and understand the dynamics of the market. But it does look like that we will see lower-level oil prices for some time.”

One of the factors affecting the economics of biofuels is the price of feedstock. While the global market pricing of food-based biofuels like vegetable oils and grain is relatively well understood, many fuels made from wastes and residues have a very limited local market, making it impossible to predict future trends in pricing of this feedstock. Compared with food-based biofuels, the capital intensity of advanced biofuels projects is generally higher, which means that a longer guarantee of assured business is essential for making a sound business case.

Cautious optimism

Despite turmoil in the policy arena and uncertainty surrounding the economics, there are still companies willing to commit to biofuels-related investments. Most of them already have some kind of connection to the petroleum industry, but there also other companies like UPM that are involved for other reasons.

“Integration is an emerging theme. Companies are integrating a completely new product to the existing business. It’s really about diversification and it makes a great deal of sense.”

Although Cooper remains optimistic that there is significant potential in advanced biofuels, there are a few things he would like to change. The first is driving down the construction costs of biofuel plants. Another is having a common voice emerge within the industry, as so far biofuels investors and producers have devoted their energy to competing against each other rather than supporting a common cause.

“The bigger objective should be making a clear case for the role that biofuels can have as part of the liquid fuels mix that we’ll need for the upcoming decades. Fossil fuels, biofuels and advanced, efficient ICE powertrain vehicles can offer a really competitive and useful alternative for the European economy and society.”

ABC STAYS TRUE TO HOME TURF

Home-grown is best, believes ABC. The Finnish service station network favours domestic eco-innovations in its product and service portfolio.

“Being Finnish is very important to us. We pay close attention to the selection of products we sell at our service stations. We especially value Finnish innovations — particularly with regard to fuels — because it takes special know-how and strong determination to develop them,” says ABC Business Development Manager **Tiina Vehmala-Viksten**.

One indication of the ‘Finnishness’ of ABC’s station network is the Key Flag symbol awarded for their services. The Key Flag symbol is awarded to services and products that are at least 50% Finnish in origin.

“The Key Flag symbol is proof of a significant percentage of Finnish labour input in a given service or product. It is not enough simply to say that you are Finnish — to gain the Key Flag symbol, you have to prove it.”

UPM’s new BioVerno diesel fuel, soon to become part of the Smart Diesel sold by ABC, has also been awarded the Key Flag symbol. Another Key Flag fuel available at ABC service stations is EkoFlex E85, which is made from organic waste from the food industry.

“Our sourcing company is constantly working to improve the quality and environmental performance of our fuel products. UPM’s renewable diesel oil is a good example, as it reduces the emissions of our Smart Diesel fuel.”

ABC is owned by the Finnish retailing cooperative S-Group, for whom sustainable development is a key priority in all products and operations. The same goes for the ABC chain, which constantly develops technical solutions to make its service stations safer



Tiina Vehmala-Viksten

“Our sourcing company is constantly working to improve the quality and environmental performance of our fuel products.”



and more energy efficient. Among its recent improvements are new lighting solutions that reduce electricity consumption.

Pit-stop logic

Customers are always interested in the origin of the products and services they buy, but where they stop to refuel ultimately depends on where they happen to be when it's time for a top-up and the customer loyalty scheme to which they belong.

“The decisions people make in their everyday lives are usually quite rational. People are less keen to drive to a particular service station a little further away in order to buy a certain product or get a special price than is commonly assumed. After choosing where to refuel, the next important thing for the customer is trusting that the products on sale are of the highest quality,” she adds.

“In the end, it is the people who need the break more than the car. Today's engines are more energy-efficient, and modern cars are able to cover more miles with fewer refuelling stops. Meanwhile, the

sales volumes of fuel products are gradually falling – this is a common trend that can be seen across the market.”

Diesel on the grow

Vehmala-Viksten predicts diesel fuels will remain popular for years to come.

“Diesel is the fuel that heavy vehicles run on, and diesel cars are very popular among people who drive a lot. I believe diesel will be around for a long time.” Important developments are set to take place in the near future with regard to the raw materials in diesel fuels.

“Today, we have more and more cars running on alternative sources of energy instead of the traditional fossil-based fuels. We need to provide services and fuel for the drivers of those cars, too,” she adds.

ABC's network comprises 437 stations, 136 of which are service stations. The rest are self-service refuelling points. ○



“**C**ompiling this report was extremely challenging and interesting – after all, the legislation will have a considerable impact on various industries and on energy and climate policy throughout Europe,” Torvalds says.

The European Union aims to cover 10% of fuel consumption in the transportation sector with renewable energy by 2020. The targeted proportion of renewable energy sources in total energy consumption is 20%.

“In order to reach these climate objectives, we will need both second-generation and third-generation renewable biofuels – there is no doubt about that. European companies hold considerable potential in the biofuels market, but we will also need clear political principles,” Torvalds emphasises.

Biofuel legislation

– What’s the EU’s next move?

The future of biofuels in Europe is being reshaped by Finnish MEP **Nils Torvalds** (ALDE). His report to the European Parliament and Commission lays down foundations for a new directive on fuel quality and renewable energy.

Moving to the next generation

The aim of EU legislation is to reduce the usage of first-generation biofuels, as the raw materials for these fuels – such as maize and sugar cane – are also suitable for food production.

“Above all, the objective is to secure investment for the development of second-generation biofuels. Technology has advanced in leaps and bounds in this field in recent years, and we have seen many interesting new innovations in the sector,” notes Torvalds.

Second-generation biofuels are made of leftover material from logging, waste and non-food-based raw materials. The new legislation will hold great importance for Finland and other Nordic countries, where wood and biomass resources are key raw materials in the advanced biofuels markets.

“The format of the proposed legislation – in terms of sustainability criteria and the hierarchy of raw materials – currently requires local conditions and raw materials to be taken into consideration in energy production. This is important to Nordic manufacturers of biofuels, who use wood as a raw material.”

One of the proposed EU directive amendments is to specify the percentage of biofuels that each member state must include in its climate objectives based on its crop yields. The proposal also assigns binding milestones for the consumption of advanced biofuels.

The proposed amendment to the directive issued by the Commission has been under discussion in EU institutions since 2012. The final decision on its content is currently scheduled for negotiation between the European Parliament, the Council of Ministers and the Commission this spring.

“Several member states do not wish to discontinue the production of first-generation biofuels, which in turn would slow down second-generation biofuel production. The solution reached in the negotiations between the EU institutions has enabled us to give a strong legislative signal to the industry encouraging investment to continue in this sector,” Torvalds concludes. ◉

CHRIS MALINS

FUELS PROGRAM LEAD,
THE INTERNATIONAL COUNCIL
ON CLEAN TRANSPORTATION
(ICCT)

STILL WASTED

In 2014, the ICCT released a report called 'Wasted'. Compiled as a co-effort with the European Climate Foundation, environmental NGOs and a coalition of advanced biofuel companies – including UPM – the report identified that Europe has an opportunity to use biomass resources that currently have little or no value in order to meet a significant fraction of European transport fuel demand.

These resources included crop residues left over after the harvest, woody residues from forestry and biomass in municipal solid waste. Developing an advanced biofuel industry to take advantage of these resources could result in a reduction in fossil fuel use, significant carbon emissions reductions, reduced expenditure on oil imports, money going back into rural economies and tens of thousands of jobs being created. And provided the industry adopts basic sustainability principles, this could all be achieved with minimal impact on the environment, without interfering with food security.

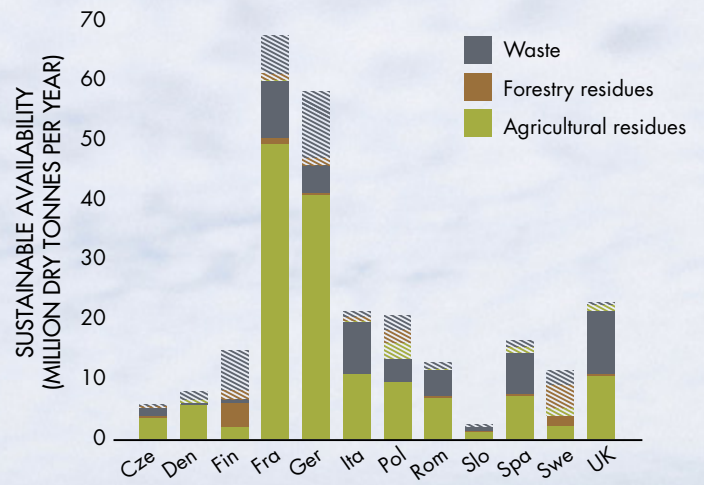
FAST FORWARD A YEAR, and the European Council and Parliament are in the final phase of negotiating amendments to the Renewable Energy Directive that will provide a framework to create incentives for these advanced technology fuels. The most important part of the package for second-generation biofuel investment is a proposed sub-target that by 2020 0.5% of transport energy should be supplied from advanced fuels produced from waste and residues.

This is a major development for the European industry, but there's a catch. Europe's Member States, concerned about the achievability of this target, have

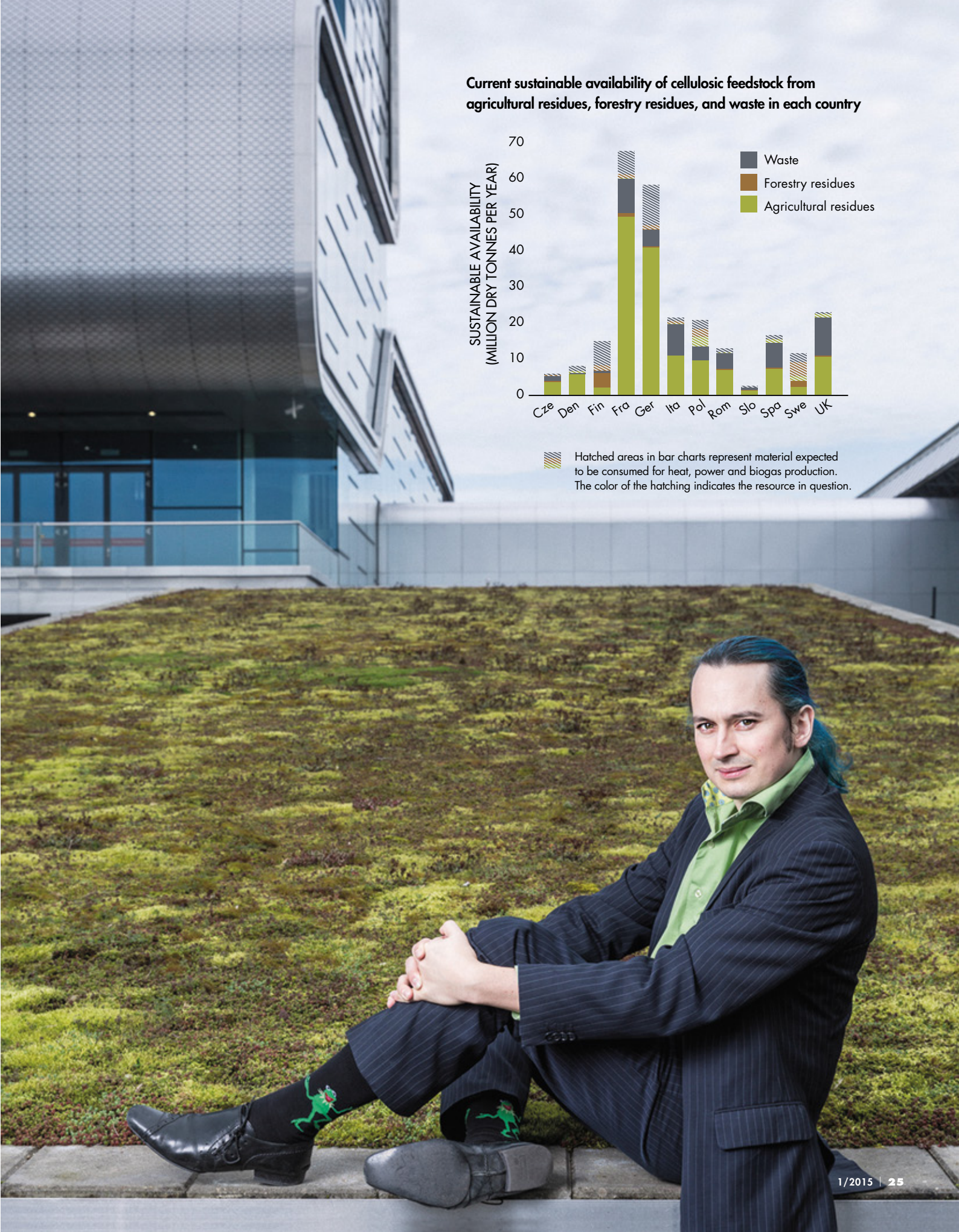
made it non-binding on themselves. Investors tend not to be interested in targets that aren't going to be enforced, so the mandate for progressive Member States is clear – following the finalisation of the ILUC Directive, they need to legislate for binding national targets as quickly as possible and inject some much needed certainty into the investment picture. Italy has already got ahead of the curve by adopting targets all the way to 2022. If enough Member States follow that lead, the EU will start to look like it means business when it comes to getting steel in the ground, and that will mean jobs, investments and some real carbon savings.

IN THE ORIGINAL 'WASTED' REPORT, we calculated fuel potential at the European level, showing that there is enough resource sustainably available to replace over 10% of European road transport fuel by 2030, if it could all be collected and utilised. In February this year we followed up on that study by publishing our assessment of resource availability at the national level for eleven countries. The core finding was that every Member State we examined has more than enough resources available to meet a 0.5% target several times over with domestic facilities. The resources vary from country to country – France and Germany have more agricultural residues, Finland and Sweden have more forestry residues, the UK has a large resource in waste sent to landfill – but the basic conclusion is the same. Those Member States that are willing to commit to doing what it takes to get the advanced biofuels industry on its feet have an opportunity to take the lead in technology development for an industry with enormous potential to expand in the coming decades. ◉

Current sustainable availability of cellulosic feedstock from agricultural residues, forestry residues, and waste in each country



Hatched areas in bar charts represent material expected to be consumed for heat, power and biogas production. The color of the hatching indicates the resource in question.





Diesel meets its match

The engine performance and fuel consumption of UPM BioVerno receive a resounding thumbs-up from the VTT Technical Research Centre of Finland.

A recent battery of tests carried out on passenger vehicles by VTT confirmed that UPM BioVerno offers all the benefits of regular diesel without the same carbon footprint – a result that came as no surprise to **Juhani Laurikko**, Principal Scientist at VTT, who also carried out the first fleet tests on the renewable diesel.

“The results of both the fuel consumption tests and emission measurements were surprisingly similar compared to regular diesel. There was no noticeable difference in fuel consumption. The cars also performed extremely well.”

Test drivers collected data using four new Volkswagen Golf 1.6.TDIs driving a total of 80,000 kilometres, combining short distances in the city and longer distances outside the city in both summer and winter conditions.



Juhani Laurikko

UPM BioVerno diesel matches the performance of regular diesel, but boasts significantly lower greenhouse gas emissions. This is verified by the ISCC EU certificate granted for sustainable raw material sourcing and sustainable production.

“UPM’s renewable diesel has a chemical composition similar to the fossil diesel for which current diesel engines have been designed, so it easily met the requirements set forth in the diesel standard.”

Cousin to fossil diesel

VTT’s fleet tests with UPM BioVerno began in May 2013 and ended early in 2014. The tests were performed using a fuel mixture containing 20% UPM BioVerno and 80% regular mineral-oil-based diesel.

“UPM’s renewable diesel has a chemical composition similar to the fossil diesel for which current diesel engines have been designed, so it easily met the requirements set forth in the diesel standard,” Laurikko says.

VTT has been testing new traffic fuels in Finnish conditions since the 1980s.

“The demand for diesel-type fuel will increase in future as diesel vehicles account for a growing proportion of driving mileage. With ship and air traffic hungry for cleaner fuels in the future, the demand for renewable fuels is bound to see a significant increase,” predicts Laurikko.

Buses up next

UPM BioVerno has also been tested by other research institutes such as the independent German research centre FEV.

“FEV works closely with the automotive industry, so it has been easy for us to approach leading car manufacturers following the publication of their test results,” says UPM researcher **Ville Vauhkonen**.

The testing process will now continue with an extensive round of laboratory tests. VTT will soon commence fleet tests with buses in Helsinki in the near future.

“The aim of the laboratory tests is to gain more detailed information on emissions and fuel consumption. We will test the fuel both as a pure biofuel and using various mixture ratios.

Our primary goal is to harness the results of long-term tests to prove that the fuel cause no harm to engines or fuel systems,” says Vauhkonen, who is in charge of the testing process.

Based on the research and tests performed so far, Vauhkonen is convinced of the high quality and performance of UPM BioVerno. The next long-term tests will be performed with high ratios of renewable diesel on buses in the Helsinki metropolitan area. ○



Ville Vauhkonen



UPM Biofuels WINS AGAIN

UPM Biofuels is making waves in the bio-industry world. Only three months after its start-up, the new UPM Lappeenranta Biorefinery was awarded as Commercial Scale Plant of the Year in the WBM Bio Business 2015 competition.

Recognising excellence in the bio-based industry, the award was presented in a gala ceremony in Amsterdam last March as part of the World Bio Markets Exhibition. The judges congratulated UPM for its innovativeness, drive and ambition in bringing new renewable fuel technology to the market.

The Lappeenranta Biorefinery is the world’s first commercial-scale plant to produce wood-based renewable diesel. The EUR 175 million facility has an annual capacity of 100,000 tonnes of UPM BioVerno diesel, which is produced from crude tall oil, a wood-based pulp residue. UPM BioVerno matches the performance of regular diesel, yet cuts greenhouse gas emissions up to 80 per cent.

READ MORE:
www.worldbiomarkets.com



Spending money to make it

grow



Between 2013 and 2016, UPM will have invested around €680 million in four significant projects aiming to increase its operating margin (EBIDTA) by €200 million.

UPM has made significant investments in biofuels, self-adhesive label papers and pulp in recent years. The production capacity for pulp is set to increase by 10% by the end of 2015.

“Demand for pulp is growing constantly in China and across Asia — this is one of our main reasons for investing in pulp production. In order to meet global demand, we have invested in both the Fray Bentos pulp mill in Uruguay and in our Finnish mills in Kymi and Pietarsaari,” says **Kari Ståhlberg**, Head of Corporate Strategy.

On the paper production side, the company is focusing on productivity and maintaining a competitive edge in Europe. Ongoing efforts have enabled UPM to maintain its profitability and strong cash flow despite the challenging market outlook.

“We sold our paper mill in Myllykoski, which was one way of seeking returns to scale in our core business. One example here is magazine paper. We value productivity in all aspects of production, and the benefits of the merger are clearly visible in our results today,” says Ståhlberg.

“While developing our current operations, we are also investing in brand-new areas that allow us to build on the strengths we already possess,” he adds.

>>



A new unit to manufacture label materials and speciality papers is under construction at the Changshu mill in China.

UPM's new business focuses in particular on biofuels, biochemicals and biocomposites. Its progress in these fields is based on solid expertise in sourcing and refining forest biomass.

“The brand-new biorefinery in Lappeenranta marks the first crucial investment. We can use this investment as a basis for judging the potential scope for future long-term development of this business in a suitable market segment.”

The company is also building a new production unit for manufacturing label materials and speciality papers at the Changshu mill in China. Stock production of self-adhesive labels will aim to capture consistent growth in emerging markets and at developing products that deliver a high level of added value.

Capital ideas

Thanks to its wisely chosen strategy, UPM's cash flow has remained steady and the company has secured capital to fund its top-priority projects, notes Ståhlberg. Sufficient funding is available both in risk financing and from banks and other financing institutions.

“From a business viewpoint, the challenges of investment are more related to poor levels of economic growth and demand. When economic growth is sluggish, new investment projects also fail to take off. At present, minor investments in development are enough to meet demand.”

Low investment rates in Europe



Kari Ståhlberg



Jyrki Katainen

are partially due to the prolonged economic downturn, admits **Jyrki Katainen**, Vice-President of the European Commission and head of a project team responsible for jobs, growth and investment.

However, he points out that this is a global problem that also affects areas outside Europe.

“Corporate investment also faces problems related to competitiveness in different EU member states. The solution has to be found at national level,” says Katainen, adding that there is no functioning internal market for energy and digital services, for instance.

Katainen is currently visiting different EU member states to introduce the European Commission’s investment package. The goal is to deepen the internal market for digital services, energy and capital, as well as to establish an investment fund worth €315 billion.

The new fund will yield capital for risk investment in the private sector and in private and public partnership projects.

“Capital investments are granted from the fund, and emphasis is also placed on higher risk investments within small and medium-sized

companies, as well as on technology pilots. The goal is to mobilise private funds for these projects,” Katainen notes.

Inhospitable environment

Investment is not only reliant on economic growth and demand, but also industrial competitiveness – or, in other words, the conditions under which companies can compete at European or global level.

The Confederation of European Paper Industries (CEPI) has estimated that the forest industry will invest about €5 billion in Europe over the next three years. Innovative technological breakthroughs, recycling and bio-based economy are all attracting investors.

However, this will not continue unless legislators are willing to enable a more hospitable business environment. Ståhlberg believes that European investment would be boosted to a significant extent by eliminating some of the regulatory obstacles that hold companies back and by enhancing competitiveness.

“The regulatory framework both

“Low investment rates in Europe are partially due to the prolonged economic downturn.”

at the national and European level influences the business environment, so the legislation must be predictable in the long term. Investing

in production mills and refineries requires a significant amount of capital. Companies must be able to predict their business environment for decades to come, also in terms of legislation.” says Ståhlberg.

Proposed rapid amendment of EU legislation on biofuels that is now under discussion has created uncertainty and delayed or blocked investment in the field. Katainen also admits that the ongoing discussion around biofuels is an unfortunate example of the difficulties posed by European regulations.

“Different industries are lobbying strongly against each other in this matter. We hope that we can reach sound decisions quickly in order to dispel uncertainty in the sector. In general, the EU should take decisions on energy and climate policy as quickly as possible; this would increase the level of certainty for investment in the energy sector,” Katainen concludes. ◉



The many **futures** of paper

Hold off the obituaries

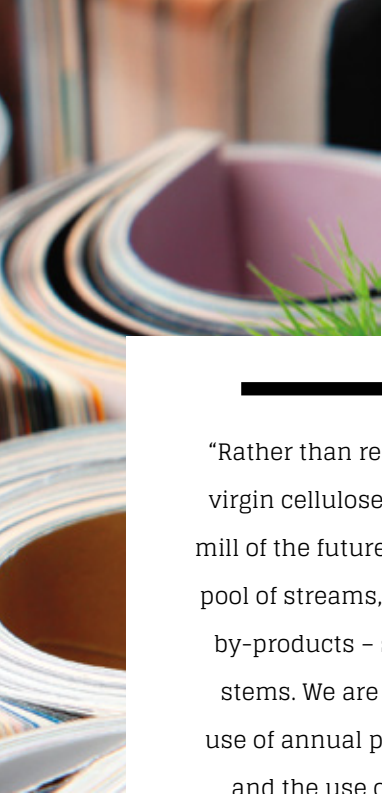
– print isn't dying.

Young visionaries predict an exciting future for the paper industry in eco-design and bio-based reincarnations.

The death of print has been foretold ever since digital media began to flourish 20 years ago. While it may be true that newsprint has been hit hard in the internet age, there are many young innovators who believe that instead of mourning paper's demise, we should rally around its renaissance.

One of them is **Spyros Bousios**, Circular Economy Expert at the Netherlands Kenniscentrum Papier en Karton (KCPK). Sharing his vision at the European Paper Week in Brussels last November, the young researcher predicted that paper is set to assume a key role within the emerging bio-based economy.

"I expect the industry will become more flexible in its selection of raw materials and more active in extracting maximum value out of its feedstock by supplying more than 'just' paper and board," says Bousios.



“Rather than relying on conventional virgin cellulose from trees, the paper mill of the future will draw from a wider pool of streams, including agricultural by-products – such as tomato plant stems. We are also looking into the use of annual plants like miscanthus and the use of grass from nature conservation areas in the production of food packaging.”



Spyros Bousios

Valuable feedstock

His vision revolves around the ‘Multiple-Input Multiple-Output’ mill. Behind this concept lies a simple rationale: greater flexibility in the raw materials going in; greater diversity in the products coming out.

“Rather than relying on conventional virgin cellulose from trees, the paper mill of the future will draw from a wider pool of streams, including agricultural by-products – such as tomato plant stems. We are also looking into the use of annual plants like miscanthus and the use of grass from nature conservation areas in the production of food packaging.”

At the mill’s ‘exit’ end, Bousios sees potential for extracting more profit from streams that currently consume money in disposal costs. Everything ‘non-paper’ that leaves the mill should not be written off as ‘waste’. Instead it should be treated as potentially valu-

able feedstock. Rejects, sludge and process waters contain valuable cellulose fibre and other organic and inorganic components that are severely underused.

“We have been exploring the potential for extracting high-value applications such as bioplastics, green chemicals and composite materials.”

Smarter grades

Another reason to get excited about paper’s future is the new functionality being added to paper products through innovative materials and technologies, notes Bousios. “For instance active paper-based food packaging can protect food from degradation.”

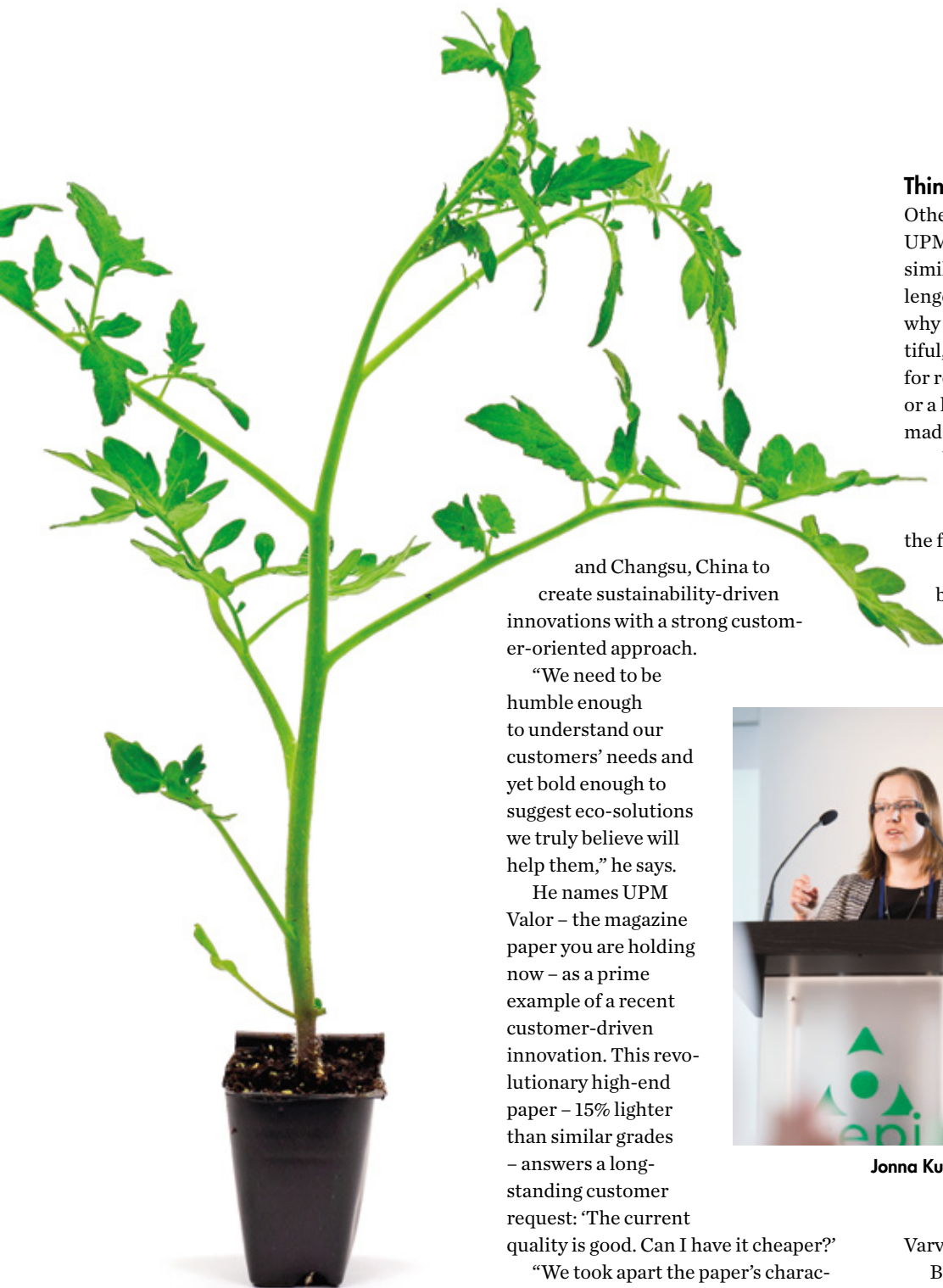
Bousios hopes his research will serve as an eye-opener showing the industry how it can secure a long-term future by embracing out-of-the-box ideas that defy established business models.

“The paper industry has vast experience operating in a bio-based context, and this experience will prove critical in the transition from fossil fuels to a bio-based economy. Paper is set to become a hub connecting many industries,” concludes Bousios.

Many of Bousios’ predictions are already becoming reality at UPM. Though its roots are still planted firmly in the paper industry, the company is now also carving out a niche as bio-economy pioneer, with biofuels, biocomposites and other high-value applications complementing its traditional portfolio.

Paradigm challenger

Like Bousios, **Janne Varvema**, Portfolio Director for Paper R&D at UPM, believes in challenging past paradigms. Leading a 100-strong team in Lappeenranta, he works closely with colleagues in Augsburg, Germany >>



and Changsu, China to create sustainability-driven innovations with a strong customer-oriented approach.

“We need to be humble enough to understand our customers’ needs and yet bold enough to suggest eco-solutions we truly believe will help them,” he says.

He names UPM Valor – the magazine paper you are holding now – as a prime example of a recent customer-driven innovation. This revolutionary high-end paper – 15% lighter than similar grades – answers a long-standing customer request: “The current quality is good. Can I have it cheaper?”

“We took apart the paper’s characteristics and figured out it’s actually the ‘optics and haptics’ that define quality, not weight. Some people may like the loud thud of a magazine when you drop it on the table, but in terms of raw material utilisation, the extra weight is unnecessary. This is a great example of how eco-design helps print stay competitive,” says Varvema.

Think big, think differently

Other new paper launches such as UPM Impresse and UPM ReCat are similarly the fruit of a paradigm-challenger mindset. “We asked ourselves why couldn’t we produce a beautiful, high-bulk uncoated product for rotogravure and HSWO printing, or a high-bright magazine product made from recycled fibre. Just because it hasn’t been done in the past doesn’t mean it couldn’t, shouldn’t or wouldn’t be done in the future.”

For many years now, UPM has been practicing what Bousios is preaching in the field of sidestreams and the circular

economy. “A beautiful example is the Cinerit business from our Central European mills, which utilises ash from deinking sludge incineration as a soil stabiliser,” says Varvema.

“It’s all about changing the way we think. Instead of getting rid of ‘waste’ the cheapest possible way, we critically review the material and energy streams of our processes, and utilise everything either in our own processes or in some other business as raw material,” explains

Varvema.

Besides promoting a zero-emission, zero-waste society, harnessing of sidestreams promises to open up many business opportunities as soon as the technologies mature a bit further, predicts Varvema.

He believes the research done at UPM will benefit the entire industry. “We truly believe the bio-based economy is the winner of tomorrow.



Jonna Kuusisto

We hope to show that the key to renewal in a mature industry is thinking big and thinking differently.”

Field of futurists

Varvema’s optimism is shared by up-and-coming Finnish researchers who are developing new applications and looking to build careers in the paper industry.

One young pacesetter is **Jonna Kuusisto**, who is currently completing her doctoral thesis for the Department of Forest Product Technology at Helsinki’s Aalto University. She, along with Bousios, was one of twelve young researchers selected to present their work at the CEPI European Paper Week last autumn.

Kuusisto is developing a self-bonding microcomposite material that integrates calcium carbonate and starch. The new composite replaces some of the fibre raw material used in paper manufacturing.

“It improves the properties of the paper, gives it extra strength and improves the cost structure. We are also investigating other applications such as using the composite in coatings and as an additive in board manufacturing,” Kuusisto says.

As soon as her thesis is finished, Kuusisto plans to launch a career in corporate R&D. “Universities and conferences are packed with enthusiastic students who are coming up with great new ideas and innovations. I’m convinced that paper has a bright future.”

Engaging young talent

Ditto to that, says **Johanna Järvinen**, another Aalto University student who is finishing her Master’s thesis for the Department of Forest Products Technology.

“I see the forest industry as an extremely interesting and visionary

field. Paper and fibre products will always be needed everywhere, so I’m confident the industry’s future is secure, especially with new opportunities emerging through research into new products such as nanocellulose and microfibrils,” she says.

Whereas in the past, Finnish forest industry students traditionally came from old mill towns, nowadays they come from bigger cities and take a keener interest in issues such as the environment, sustainability and biochemicals, notes Järvinen.

“Renewable materials, product recyclability and efficient forest management are all important focus areas at the heart of today’s forest industry.”

Insider view

Järvinen has worked as a young professional at UPM for about a year now, which has offered a variety of insider perspectives on the industry.



Johanna Järvinen

She started her UPM career in 2012 at the Fray Bentos pulp mill in Uruguay as part of the Bioforce programme. She also gained experience working in UPM’s sales office in Shanghai and at CEPI’s office in Brussels, where she learned about the organisation and how it represents the forest industry in Europe.

There are plenty of career opportunities in the industry, but Järvinen emphasises that more young people should be encouraged to engage in industry networks. In the future, she sees herself working in a customer interface role in the paper and pulp industry.

“There’s a massive amount of knowledge and expertise in the paper industry, and we need also to bring new people into the field. By combining the views of seasoned experts with the ideas of young researchers and students, we can leverage ideas and innovations that can benefit the whole industry.” ◉

www.cepi.org/EPW

Who said paper is dead?

Leaders of the print industry remind us why paper media isn’t going anywhere – not for a long time. Hear their views on YouTube:

Tony Chambers, Editor, Wallpaper* magazine

Dominic Pemberton, Argos and Home Retail Group

Pauline Zosi, Manager distribution and promotion, IDEAT

Mercedes Erra, Founder of BECT and Managing Director of Havas Worldwide

Designing the perfect product

It's no coincidence that UPM products raise the bar in safety and sustainability. They are designed that way from scratch through proactive product stewardship.

The world around us is changing rapidly. Increasing demand for resources such as oil, food, water and energy is driven by global population growth, urbanisation and by an expanding middle class in the emerging markets.

At the same time, there is steadily growing concern about product safety, which is a common issue for consumers all around the world.

The future thus presents previously unseen opportunities and challenges. In response to these concerns, UPM has created a product stewardship approach focusing on eco-design, product safety and ecolabels.

“Product stewardship is a top priority for UPM. Our approach covers the entire value chain from the procurement of raw materials up to the end products and their lifecycle,” describes **Sami Lundgren**, Director, Ecolabels and Reporting.

UPM has a strong foothold in the wood processing and biorefining value chain, which it utilises to create new innovative-driven and sustainable businesses and products. The company’s comprehensive product range, reliability and excellent environmental performance are valued also by customers.

Examples of eco-design

UPM systematically integrates environmental aspects into the product design at an early stage of the process. The principle is extended over the product’s whole lifecycle, with the target of reducing its lifelong environmental impacts.

“Eco-design is an important part of our product development. The approach guarantees that the impacts of our raw materials and manufacturing processes throughout the entire value chain are already minimised during the design stage,” emphasises Lundgren.

A great example of forward-thinking eco-design is The Biofore Concept Car, which demonstrates the innovative use of biomaterials in ways previously unseen in the automotive industry.

The majority of car parts traditionally made from plastics are replaced

with high-quality, safe and durable biomaterials, UPM Formi and UPM Grada, which significantly improves the overall environmental performance of the car manufacturing process.

In addition, the vehicle runs on UPM’s renewable wood-based diesel, UPM BioVerno. The fuel significantly reduces greenhouse gas emissions in comparison with fossil fuels, and it is suitable for all diesel engines.

‘No’ to hazardous chemicals

To minimise hazardous chemicals in all its products, UPM has created The UPM Restricted Chemical Substance List (RSL), which controls the use of roughly 6,000 harmful chemicals.

The UPM Restricted Substance List (UPM RSL) was updated in 2013, and the new requirements became valid in 2014.

“We have trained all our relevant sourcing personnel and we have communicated the updated list to UPM’s suppliers. We have also checked their compliance with the renewed list,” says Lundgren.

A good example of a ‘clean’ product is UPM Grada, a thermoformable wood material that is designed for the form pressing industry. While it helps UPM’s customers improve their production efficiency, it is also a safe material containing no harmful compounds.

“UPM Grada has no added formaldehyde or volatile organic content. It is therefore ideal for public and private spaces. Products made of UPM

Grada can be safely recycled or burned at the end of their lifecycle.”

Stamp of sustainability

UPM’s progress in ecolabels is proving the success of its approach. Ecolabelled sales are climbing steadily in line with the UPM’s 2020 target, currently standing at 76% in selected businesses.

“We are the world’s largest producer of EU ecolabelled newsprint, graphic and office papers. To also help our customers secure the right to use ecolabels, UPM has participated actively in developing new EU Ecolabel criteria for converted paper products,” says Lundgren.

UPM provides detailed product declarations and environmental data for most of its products, giving customers easy access to any information they might need on the sustainability of the products and supply chain.

To further support its paper customers, UPM created a new Product Safety Profile in 2014. This unique tool ensures that UPM’s customers receive all relevant product safety information in a concise form and from a single source.

The document includes basic facts on product composition, product certificates, regulations related to product compliance and other possible measures taken to ensure that the product is safe. ○



LABEL MARKET LIFTS OFF IN MEXICO

Want to be a part of the newest boom market for labelstock? Build your business in Mexico.

This advice comes from **Jose Garcia**, UPM Raflatac Sales Director and General Manager for Mexico, Central America and the Caribbean. UPM Raflatac is doing just that. The company has recently opened a new service terminal in the bustling city of Guadalajara, the country's third-largest metropolis by population and economic activity. With two terminals in Mexico, several warehouses, and plans to upgrade its service network, UPM Raflatac is making a solid commitment to this vital market – and the company's Latin American growth story.

UPM Raflatac is not alone in turning west to Mexico, as other label manufacturers are also making significant investments in building out their infrastructure. So how is UPM Raflatac standing out in such a competitive market?

Fighting price wars with quality

"It's not easy," acknowledges Garcia. The market is still extremely price-driven, and glue-applied labels still dominate as the label technology of choice for many printers. Consequently, many pressure-sensitive label manufacturers are engaged in a punitive price war to win business.

UPM Raflatac has chosen to go a different route: “We are well-known as a high-quality and high-service company. That is a fact. So even though there are nine players in the market, we are at the top of the list. We will let others fight on price,” says Garcia. While product decoration in emerging markets often lags behind mature markets, “Our labels and materials in Mexico stand on their own against any player in the world,” he states proudly.



Jose Garcia

That quality message and experience is one that’s resonating with customers. The Mexico operation is witnessing significant growth year after year. “Customers are willing to pay a little bit more if they get a great quality product and excellent service,” says Garcia. “To succeed in Mexico, you have to know it’s about service, service, service.”

“Big end-users are as – or even more – demanding as they are in the U.S.,” he adds. “They want the best of the best. They might compromise on lower-end products like shipping labels, but not when it comes to consumer-facing products where presentation and performance are everything.”

Priming the pump for high value

Currently, UPM Raflatac’s business is fairly evenly split between papers and films, but Garcia sees that changing. “Every day, companies and consumers are getting more sophisticated, and because of that, business is growing. We are also seeing more demand for specials labels. He singles out prime films and special solutions as key areas for growth. “All brands, not just pharmaceuticals, are seeking security measures to prevent counterfeiting. They come to converters and ask for labels that can help them protect their products.”

Garcia’s team in the region includes **Alberto Hidalgo**, Country Sales Manager, Mexico, **Sergio Ponce**, Territory Sales Representative for Central America and **Celsy Arauz**, Territory Sales Representative for the Guadalajara area, as well as several dozen production staff. “You can’t imagine how proud I am of our team. They have the industry knowledge and expertise, and that is key to thriving in this market,” he says.

Garcia says that UPM Raflatac is also making behind-the-scenes investments, such as winning ISO 9001 certification for its Mexico terminals and Forest Stewardship Council® chain-of-custody certification for the paper products it uses in manufacturing. It also was the first label company in the country to receive the ESR (Empresa Socialmente Responsable) certification from Cemefi, a Mexican philanthropic organization, acknowledging a commitment to its employees and the communities it serves.

Listen, learn – and change

Another secret to UPM Raflatac’s success in Mexico is the company’s willingness to change. “When we meet with our customers, we ask them about their experiences with us and how we can improve. It’s not possible to change or say yes to everything. However, sometimes you hear one or two things you can improve to make your service better,” says Garcia.

Garcia’s vision is nothing short of market leadership. “Within two years, we hope to be the number one company selling labels in the market. I believe we have everything we need to make it happen.” ◉

INTENSIVE CUSTOMER CARE FROM INDUSTRY EXPERTS

Fast, expert service is the new norm in industry today. To provide converters with express technical support, UPM Raflatac Americas has formed a Technical Product Consulting team to provide on-demand and onsite consulting for its paper, film and special label solutions.

Headed by **Megan Letarte**, the team supports converters in selecting the right label solutions for specific applications and in troubleshooting any issues that occur on press.

Customers can access them by calling a toll-free number during normal business hours. “We answer the majority of their questions right then and there on the call. If anything requires research, we’ll get back to them within a two-hour window,” says Letarte.

The team’s experts guide customers through the product selection process, making sure they find the ideal labelstock for their need, whether it be a label that will stick for six months on a cold, wet application, or a film that can be exposed to sunlight and last for ten years.

Travelling consultants provide onsite support, helping match materials to equipment, assisting with trials and new products, and performing quality checks on presses. If the customer is having problems, the consultants look carefully at whether they might be using the wrong product for their specific application.

Letarte sees the consulting service as a door opener. “If our customers call us first, they might never reach out to anyone else, because we can help them quickly with the right technical response. We’re really excited about being able to take better care of our customers.”

Stay safe and keep on trucking

Each year, more than 40,000 trailers using WISA solutions take to the roads — UPM Plywood trailer floors are already standard across Europe. With the launch of WISA-TopGrip, UPM again sets new benchmarks by offering a solution designed for maximum slip resistance.

In May 2014, freight company Ansorge dispatched a lorry to the UPM plant in Augsburg, Germany. Its mission: to pick up paper rolls weighing several tonnes and ship them to the designated unloading point. All in all, this was a routine operation — Ansorge, UPM's trusted partner for 20 years, are specialists in the transportation of heavy palleted goods. The company knows the key factors at play in heavy shipments, first and foremost compliance with stringent safety standards and regulatory guidelines on the protection of freight and employees.

Existing provisions stipulate the use of disposable non-slip mats, which are laid in the trailer before the truck is

loaded. After the goods are delivered, the mats are disposed of. Carrying out this process consumes a significant amount of time and money, while also presenting risks to the health and safety of employees.

Last year's trip to Augsburg was a special one for Ansorge, however, as this was the first time the trailer was fitted with new WISA-TopGrip floor covering from UPM Plywood. Unlike ordinary plywood board, WISA-TopGrip comes with an anti-slip coating, eliminating the need for disposable mats. The built-in slip resistance means loading and unloading operations can be performed in significantly less time, without compromising

safety. In developing this solution, UPM Plywood created a truly innovative product that combines eco-design with a significant value add, both for UPM and its partners.

Five minutes saved per load

The outstanding feature of WISA-TopGrip is the polyurea-based non-slip coating. This coating not only provides the required level of grip, but also makes the floor more durable. Like other WISA floors, TopGrip has been developed to ensure the floor outlasts the complete lifecycle of a lorry, which is between four and five years.

"After around 230 loading operations, the floor showed no signs of



wear and tear on completion of the test run — an excellent result that has even been certified by Dekra’s vehicle inspectors,” says **Wolfgang Thoma**, Managing Director of Ansoerge Logistik.

In the unlikely event that the loading operation causes damage to the anti-slip coating, local damage can be repaired in a quick and simple process.

Ansoerge’s lorries carry a daily average of 30 loads to various unloading points. By using WISA-TopGrip, around five minutes can be saved per load, enabling the haulage experts to increase their journey frequency in future. Meanwhile, UPM can process a significantly greater number of orders and increase its own level of profitability.

Efficiency up, waste down

Another benefit is the minimised risk of serious injury to the driver when laying the anti-slip mats. Thanks to the TopGrip solution, all that is required to achieve optimum load security are belts to secure the load.

“Meeting safety standards and identifying potential areas for optimisation are top priorities for Ansoerge. We take pride being able to guarantee not only that our customers’ freight is transported without a hitch, but also that our employees enjoy maximum protection,” says Thoma.

WISA-TopGrip underwent six months of testing at Ansoerge in total. Now that the tests have been completed

successfully, the company is converting its entire fleet. By 2017, all 300 of its trailers will be fitted with the new floor.

UPM works closely with its customers to develop optimum solutions to meet their specific requirements. With WISA-TopGrip, UPM has created a product that also enhances its own also value add. By eliminating the need for disposable mats, this innovation has cut the volume of waste at the Schongau production site by some 192 m³ in 2014. This is in keeping with the UPM Biofore sustainability pledge to create both ecological and economic added value. ◉

SEEING THE FOREST FOR THE TREES

Pulp investments planned in Finland are set to significantly increase demand for wood by 2018 – in fact so much that supply from private forests will have to increase by ten million cubic metres per year.

VP, Stakeholder Relations, UPM Energy and Public Affairs at UPM, **Stefan Sundman**, emphasises the importance of increasing wood supply from private forests to the successful rollout of forthcoming pulp investments.

“The wood market has been steady in recent years. As a result of new projects, the demand for pulpwood is increasing by six million cubic metres annually. To meet this demand, ten million cubic metres of timber will have to be felled.”

Current supply is not enough to satisfy demand. More wood will have to be sourced from somewhere, which presents tangible opportunities for growth. Finland could afford to increase its timber harvesting by one third without exceeding sustainable felling levels.

If the ever-growing demand for wood can be met through domestic supply, stumpage



+ 10 Mm³

earnings for forest owners could climb as high as €350 million per year.

However, there is a challenge: Almost one third of Finland's commercial forest area has not been managed or felled over the last 30 years. Increasing wood supply also requires committed efforts from the government.

"Currently, passive forest owners are not encouraged to trade their wood and manage their forests," affirms Sundman.

Thinking bigger

"We should encourage the formation of larger forest properties rather than splitting them up," he adds.

With forest properties shrinking in size, owners are less motivated to manage them. Measures promoting larger forest properties could include tax relief when land is passed to the next generation, or a fixed-term tax exemption in sales profit when smaller forest properties are integrated.

Another novel approach to increasing wood supply is the new type of jointly owned forest that UPM is promoting.

Efficient wood supply also requires an optimum infrastructure for transporting wood. The miles of paved road in need of repair will triple in ten years, and the financing gap for their repair will increase annually by €250 million.

Renewable future

"The forest industry has a notable impact on employment. The sector is also important in terms of export revenues. If Finland hopes to maintain its significant role in wood processing, we have to secure wood supply both for current mills and future investments. To promote economic growth, we must make sure that new investments will not simply directly replace smaller mills."

A proactive approach to forestry is the best climate policy. The planned pulp investments are estimated to increase renewable energy production in Finland by approximately three percentage points.

"Pulp mills produce a vast amount of renewable energy.

It is therefore crucial that we build a sound future for our bio-refineries and pave the way for new investment," concludes Sundman. ◊

WHY IT PAYS TO INVEST

In 2014–2015 UPM invests €160 million in the UPM Kymi pulp mill. The investment will finance a new pulp-drying machine, modernisation of the softwood fibre line, a new debarking plant as well as work to improve the energy balance of the Kymi integrate.

Production capacity at the pulp mill will increase by 170,000 tonnes, a move further strengthening UPM's foothold on the global pulp market.

The investment has significant multiplier effects locally, regionally and even nationally. Wood consumption will increase by almost one million cubic metres, requiring 25 new harvesting lines. Stumpage earnings for forest owners will increase by more than €30 million.

In the building phase, the investment will increase employment, income and purchasing power in the area. The project currently employs around 300 people, with roughly 20 local contractors involved in the project.

The investment also generates new business for the chemicals industry and creates employment opportunities in logistics through product and raw material transports. The forest industry currently employs about 6,300 people in southeast Finland.

A modern outdoor terrace with dark grey decking. The space is furnished with white lounge sofas, a white coffee table, and a large white umbrella. There are colorful cushions and a striped blanket. The terrace is enclosed by a glass wall, and trees are visible in the background.

Starts beautiful, stays beautiful

The UPM ProFi decking system is available in two style ranges and 14 colours.

The Finnish forest industry is a trailblazer in the use of renewable energy sources, as well as the development and manufacture of products related to the bioeconomy.

Environmentally friendly UPM ProFi composite decking, based on innovative use of recycled raw materials, is a fine case in point. The high quality decking system combines beauty and low maintenance in two style ranges and 14 colours. The UPM ProFi Design Deck range offers a fresh and modern new style, while the UPM ProFi Classic range comes with the same look and feel as the natural hardwood deck. UPM ProFi Veranda is the latest novelty in the UPM ProFi Classic range.

UPM ProFi Veranda is a premium composite decking. As with all UPM ProFi products, it has a unique low-maintenance surface with superior stain resistance. The boards feature a natural hardwood look and texture, and withstand the rigours of any climate. UPM ProFi Veranda is designed in Finland and manufactured in Germany. Patented composite technology provides stain resistance superior to that of traditional brushed wood-plastic or wood decks. The cellulose fibres are fully encapsulated in plastic and are further protected by a top layer of high-performance biocomposite UPM Formi.

Manufactured using lignin-free cellulose fibre, UPM ProFi Veranda offers excellent colour durability. Lignin is the natural wood molecule that causes wood and other cellulose fibre to turn grey when exposed to sunlight. Designed in Finland, the decking offers outstanding cold weather tolerance. Due to its very low water absorption, it can be installed at a zero degree incline.

UPM ProFi Veranda consists mainly of recycled raw materials

The principal raw materials are specially selected cellulose fibres and clean plastic polymers, which are industrial byproducts that would otherwise end up in landfill or the incinerator. Being non-toxic, the composite can be incinerated or disposed of in household waste or recycled when it reaches the end of its long lifecycle.

“Many end-users want the natural beauty of hardwood decking without the worries of maintenance. UPM ProFi Veranda offers a visually appealing yet user-friendly decking solution for outdoor terraces that will last for years to come,” says **Markku Koivisto**, Vice President, UPM Biocomposites.

UPM ProFi Veranda high-performance decking comes in a shade of Brazilian Walnut. Silver Ash will complete the range later this year. The decking has a reversible surface, with fine grooves on one side and embossed stripes on the other. Dark streaks and veins add natural accents to both sides of the profile. Please visit www.upmprofi.com to check your nearest distributor. ○



UPM ProFi Veranda FAST FACTS:

- solid, two-sided profile
- part of UPM ProFi Classic Deck range

COLOURS:

- Brazilian Walnut, Silver Ash

SIZE OF BOARD:

- 25mm x 140mm

MATERIAL:

- biocomposite, main raw material recycled paper and plastic

FEATURES:

- luxurious hardwood finish
- superior stain resistance
- zero degree incline possible
- recycled and recyclable
- good friction, wet or dry
- high impact strength

MAINTENANCE:

- regular cleaning with water and brush

WARRANTY:

- 15 years

Product web pages and local distributors: www.upmprofi.com



Winner: Ricoh Industrie France;
Franck Révillion and Elodie Heintzmann

UPM Raflatac's Label Life Awards

Saluting our partners in sustainability



Ricoh Industrie France took home first prize in this spring's inaugural UPM Raflatac Label Life Awards. The Japanese-owned business was chosen as the winner from among four finalists invited to present their sustainability projects at the UPM Raflatac Wrocław factory in Poland in February.

A strong responsibility agenda is built into UPM's DNA. To promote the same mindset through its supply chain, UPM Raflatac launched the Label Life Awards to encourage learning and stronger partnership in the work it does with suppliers and stakeholders.

"This is a natural step in our responsibility roadmap. We want to give recognition to the suppliers who share our vision," says **Sami Poukka**, Vice President of Sourcing.

"There's a growing need to keep sustainability at the forefront of the business. We want to encourage suppliers to take



Sami Poukka

the next step toward true mutual partnership,” affirms **Robert Taylor**, Director for Stakeholder Relations at UPM Raflatac and Chairman of the Label Life Awards Jury.

Ensuring fair judging by peers, UPM Raflatac invited external expert judges to take part, including the Head of Conservation for WWF Poland, **Piotr Nieznanski**. “We have had a close cooperation for several years with UPM Raflatac. This Label Life initiative is very important, inspiring business to make changes for sustainability. The importance of events like today is in the multiplication of the positive effects for the environment. The challenge remains for businesses to ensure that environmental protection is possible as a part of everyday life,” comments Nieznanski.

Big on biodiversity

Ricoh impressed the judges with their ‘Life and Colour’ project at their Colmar plant in Eastern France. Designed to promote biodiversity, the project has gained a high level of stakeholder engagement, with employees regularly volunteering in a wide-scale landscape management plan. In the past eight years, they have planted wildflowers, installed nesting boxes, planted rare fruit trees and hedges and established a beehive on the site. The project is self-funding thanks to reduced maintenance costs. Reduced mowing of green spaces alone has brought a 30% cost saving.

“This is great recognition of our efforts. This event has been a huge learning experience for us showing us how our peers in similar industries are tackling responsibility. We will certainly be taking home a great number of ideas and hope to enter again in 2016,” says **Elodie Heintzmann**, Environment Manager for Ricoh Industrie France. ○

LABEL LIFE FINALISTS

RICOH INDUSTRIE FRANCE

Life and Colour

First prize went to this long-lasting sustainability initiative tackling biodiversity and encouraging wildlife back into the industrial landscape. A high level of stakeholder engagement with local communities and schoolchildren ensures a multiplication factor and cascading of key principles of responsibility.

DOW CHEMICAL

State-of-the-art food safety program

Commended by the jury, Dow’s Predictive Toxicology Center uses the latest technology in computer simulations to guarantee food safety. The paramount goal of the initiative was to reduce the need for animal testing while increasing speed to market of new products and response to customer enquiries.

MUNKSJÖ AND RECULINER

Cellulose Fibre Insulation

Munksjö were also commended for their Recu-Liner concept, which converts waste from labelstock into cellulose fibre insulation (CIF). The project dovetails neatly into Munksjö’s own Full Circle programme as well as linking into recycling businesses within Europe, offering a simple retro-fit to existing recycling facilities.

DYNASOL

Triple Result Project

Dynasol, part of the Repsol group, made an impression on the judges with their stakeholder commitment in local communities. Dispelling myths about the Latin American approach to responsibility, Dynasol have built a three-way, metrics-based strategy focusing on reducing the impacts of its operations through investment and better planning, as well as holding open days and engaging with the local community about their operations.

The payoff of

UPM has been selected for Nordea's Nordic Stars Equity Fund portfolio – the choice of ethical investors.



Antti Savilaakso

The Nordic Stars Equity Fund recently launched by Nordea highlights Nordic companies from various sectors that combine solid financial performance with a strong sense of corporate responsibility, explains Nordea investment expert **Antti Savilaakso**.

“We use a specific research methodology to analyse the corporate responsibility track record of each company up for investment. We look at the company’s policy on climate change and use of natural resources and water, for example, and assess how its actions affect these issues.”

UPM’s Biofore strategy fits the bill to a tee. When it comes to generating energy, UPM uses reliable, low-emission, cost-competitive energy sources.

The product portfolio, too, is based on renewable raw materials and sustainable sourcing. The majority of UPM products can be recycled, and the company reuses many of its products in paper and biocomposite production and in generating energy.

“We also evaluate the company’s relationship with its most significant stakeholders, such as its personnel, subcontractors, customers and inves-

doing good

tors, as well as how it deals with the local environmental impact of its production facilities,” Savilaakso adds.

Other factors up for consideration include the company’s policy on R&D investment – an area where UPM’s focus is on environmentally innovative products such as wood-based renewable diesel, biochemicals and biocomposites.

“We also carried out a general corporate responsibility analysis and found that UPM is a perfect fit for our ethical portfolio,” Savilaakso notes.

Sound ethics is smart business

Savilaakso emphasises that corporate responsibility evaluation is carried out in parallel with financial analysis.

“The market often mistakenly views good management of corporate responsibility and high returns as being mutually exclusive. In most cases, however, the truth is completely the opposite. Essentially, companies that act responsibly make a sound investment thanks to their high-quality management and long-term strategy,” Savilaakso points out.

An efficient management system enables the company to anticipate risks, assuring investors of a

better return and fewer unpleasant surprises.

“Prudent management of corporate responsibility also leads to wiser investment decisions over the long term. This facilitates the work of the company’s financial managers, too, as investors are less prone to immediately sell their stock at the first sign of market fluctuation,” Savilaakso confirms.

“Ideally we look for companies that perform extremely well in both areas to include in our investment portfolio.”

Coming soon for private investors

Compared to traditional equity funds, responsible investment funds have a slightly smaller number of stocks and a lower stock turnover.

“Stocks are usually held in a portfolio for an average of 3–5 years, but in practice, the portfolio manager carries out a daily evaluation that forms the basis for stock purchases,” Savilaakso explains.

Nordea’s Nordic Stars Equity Fund has initially been marketed to institutional investors, but will also be introduced to private investors on a gradual basis. ◦

“We use a specific research methodology to analyse the corporate responsibility track record of each company up for investment. We look at the company’s policy on climate change and use of natural resources and water, for example, and assess how its actions affect these issues.”



MAKING A MARK IN FOOD LABEL SAFETY

UPM Raflatac is one of the world's first labelstock producers to gain ISO 22000 food safety certification.

"This confirms that we stand at the forefront in manufacturing safe, high-quality label materials for the food industry," says **Vesa Laaksonen**, Quality Development Director for the self-adhesives manufacturer.

ISO 22000 is a Food Safety Management System that can be applied to any organization in the food chain. Becoming ISO 22000-certified allows a company to prove it has an efficient food safety management system in place – something that customers appreciate amid growing global concern for food safety.

Particularly in Europe, there are strict regulations governing food safety practices. Under European food packaging legislation, only companies complying with the EU's Good Manufacturing Practice (GMP) Regulation are allowed to supply food contact materials.

Zero compromise

"ISO 22000 demonstrates to our customers that the food safety processes at our factories are in good order and meet GMP requirements," says Laaksonen.

Only carefully selected raw materials of proven compliance can be used in food packaging, he explains. "In addition, the manufacturing process must not cause any chemical, physical or biological contamination of the food product."

The current certification is valid for three years and covers Raflatac's factories in Finland, the UK and Poland. It includes the manufacture and slitting of self-adhesive labelstock for food contact and food packaging used by the printing and converting industry.

UPM Raflatac's factories are audited annually by Lloyds Register Quality Assurance (LRQA) to ensure continued progress and compliance with ISO 22000 requirements.



Vesa Laaksonen



Indicatorium to commercialise UPM's food freshness indicator innovation

UPM and Indicatorium Oy have entered into an agreement for the international commercialisation of the food freshness indicator technology developed by UPM. Food freshness indicator is a smart label that reacts to certain chemicals and helps to determine whether a food product is still fresh and safe to eat. Indicatorium is aiming to introduce food freshness indicator to the global market. The Finnish Funding Agency for Technology and Innovation (Tekes) will finance the initial stage of the project.

TURNING A NEW PAGE WITH BIOFORE

UPM Valor is a new game-changing paper, and a fine example of innovative Biofore thinking in practice.

The premium printing paper strikes the perfect balance between consistent paper properties and good environmental performance. The paper is light, yet it feels the same in your hands as heavier grades.

Lighter paper means a smaller environmental footprint. It requires less raw material, less water and less energy to produce and to transport it. And just like all UPM papers, UPM Valor is renewable, recyclable, biodegradable and made from certified raw materials.

UPM Valor makes savings in mailing and delivery costs and supports the sustainability of customer operations.

It is a true Biofore product.

UPM PAPER – YOUR SMART CHOICE

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