The Biofore Company UPM

Updated UPM Corporate Environmental Statement 2017

AIMING HIGHER WITH BIOFORE

UPM pulp and paper mills

About this report

EMAS reporting at UPM pulp and paper mills

All of UPM's European pulp and paper mills as well as the Fray Bentos pulp mill in Uruguay and the Changshu paper mill in China are registered with the EU Eco-Management and Audit Scheme (EMAS), a voluntary environmental management system for companies and other organisations to improve, evaluate and report on their environmental performance on an annual basis.

UPM Corporate Environmental Statement together with the Environmental and Societal Responsibility reports of each mill of UPM comprise the global EMAS statement of UPM Corporate.

Since 2017 societal responsibility indicators are part of the mill reports (except UPM Shotton). UPM considers it is important to report all the impacts generated to the mill locations, whether it is environmental or societal.

Information within the corporate part concerning the sites mentioned here as well as the information used for calculation of UPM Corporate level EMAS core indicators has been assessed and verified by the respective national EMAS auditor.

The present corporate part is the update of the UPM Corporate Environmental Statement 2015. The UPM Corporate Environmental Statement 2015 as well as the present Updated UPM Corporate Environmental Statement 2017 with mill supplements are available at www.upm.com. The next Corporate Environmental Statement will be published in 2019.

Corporate responsibility reporting at UPM

At UPM, the environmental and corporate responsibility reporting is integrated with the company's annual reporting. The UPM Annual Report 2017 follows the framework and disclosures of the Global Reporting Initiative's (GRI) Sustainability Reporting Standard and meets the requirements of the Core option. For the Annual Report and GRI content index table, please order a printed copy of the report or visit www.upm.com/responsibility.

Scope of the report

This statement forms the corporate part of the environmental statement, which has been verified in accordance with the EU's Eco-Management and Audit Scheme (EMAS). The following sites are included in the EMAS scope:

– UPM Augsburg
– UPM Caledonian
– UPM Changshu
– UPM Chapelle Darblay
– UPM Ettringen
– UPM Fray Bentos
– UPM Hürth
– UPM Jämsä River Mills
– UPM Kaukas
– UPM Kymi
– UPM Nordland Papier
– UPM Pietarsaari
– UPM Plattling
– UPM Rauma
– UPM Schongau
– UPM Shotton
– UPM Steyrermühl
– UPM Tervasaari

Corporate registration number: FI-000058

Information about sites without EMAS registration

The non-European site UPM Blandin is not EMAS registered. The information concerning this site has not been assessed or verified.

UPM

UPM leads the forest-based bioindustry into a sustainable, innovation-driven, and exciting future across six business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Specialty Papers, UPM Paper ENA and UPM Plywood. Our products are made of renewable raw materials and are recyclable. We serve our customers worldwide. The group employs around 19,100 people and its annual sales are approximately EUR 10 billion. UPM shares are listed on NASDAQ OMX Helsinki.

UPM – The Biofore Company – www.upm.com

Contents

All process water is treated in mechanical and biological effluent treatment plants before being released into watercourses.

Environmental targets show direction

UPM is committed to responsible operations and sustainable development. Responsibility and a holistic approach to environmental issues are the key building blocks of UPM's safe and responsible business operations and product development.

In order to guide its responsibility activities, UPM has established a set of responsibility focus areas with targets and key performance indicators which are reviewed every year based on a materiality analysis.

In terms of environmental responsibility, the focus areas are sustainable products, the climate, the use of forests and water, and the reduction of waste.

UPM's environmental focus areas, key performance indicators and current Group-level performance in relation to the relevant targets can be seen in the table below.

The annual target-setting of UPM's pulp and paper mills is published in the mill supplements. The mill-level targets reflect UPM's long-term targets at a local level. In addition, the mill-level targets focus on the specific local development areas.

Group-level environmental targets

Key area of responsibility	2030 target [1]	2030 follow-up/2017 results
Product stewardship Taking care of the entire lifecycle	• Environmental Management Systems in 100% use *(continuous)* • Environmental Product Declarations for all products *(continuous)*[2] • All applicable products eligible for ecolabelling by 2030	• 96% of production sites have a certified environmental management system in place, and implementation is underway at the rest. • Environmental declarations are available for all relevant UPM products. • 85% of UPM sales was eligible for ecolabelling.
Waste Promoting material efficiency and circular economy – reduce, reuse and recycle	• No process waste to landfills or to incineration without energy recovery by 2030	• 89% of UPM's total process waste was recovered or recycled. The total amount of waste to landfills decreased by 13% compared to 2016.
Climate Creating climate solutions and working towards carbon neutrality	• Fossil CO_2 emissions from own combustion and purchased electricity (Scope 1 and 2) reduced 30% by 2030 • Maximise the business benefits of greenhouse gas claims *(continuous)* • Improve energy efficiency annually by 1% (continuous) • 70% share of renewable fuels (continuous) • Acidifying flue gases (NO_x/SO_2) reduced 20% by 2030[3]	• Fossil CO_2 emissions reduced by 6% compared to 2016. However, the increase in 2011 due to Myllykoski acquisition has not been compensated yet. In the Myllykoski acquisition paper mills using only fossil fuels for energy production were transferred to UPM, which increased the CO_2 emission per ton of paper. • UPM sold greenhouse gas claims worth of 520,000 CO_2 tonnes. Without sales, UPM's reported emissions (Scope 1 and 2) would have been over 8% lower. • Energy efficiency target was achieved. • Level of 69% reached in the use of renewable fuels. • 31% reduction achieved since 2008 for the UPM average product.
Water Using water responsibly	• Effluent load (COD) reduced 40% by 2030[3] • Wastewater volume reduced 30% by 2030[3] • 100% of nutrients used at effluent treatment from recycled resources by 2030	• 32% reduction in effluent load achieved since 2008 for the UPM average product. • 13% reduction in wastewater volume achieved since 2008 for the UPM average product. • The project started in 2016. Already 17% of nutrients come from recycled resources.
Forests and biodiversity Ensuring sustainable land use and keeping forests full of life	• 100% coverage of chains of custody *(continuous)* • All fibre certified by 2030	• Coverage is 100%. • The share of certified fibre increased to 85%.

1) Environmental targets: from 2008 levels 2) Includes paper, timber, plywood, pulp and label 3) Numerical targets relevant for pulp and paper production

Pulp

By the end of 2017 UPM Pulp had increased its pulp production capacity by nearly 500,000 tonnes in just four years. Simultaneously, production efficiency has improved at all mills thanks to these growth investments. UPM Pulp has continued strengthening employee competencies as well as safety and environmental performance. Emphasis has also been put on product safety according to the ISO 22000 Food Safety Management System standard. The single largest environment related investment was effluent treatment plant improvement at the UPM Fray Bentos pulp mill.

Fibre sources

In 2017, 81% of wood used in pulp production was from FSC® and/or PEFC™ certified forests with the remainder coming from controlled sources.

Energy

UPM's pulp mills are more than self-sufficient in energy usage, providing surplus heat and electricity for the integrated paper mill or to external parties. The share of renewable energy increased from 92% to 94% in 2017. Fossil fuels are needed mainly for start-up of the boilers.

Air

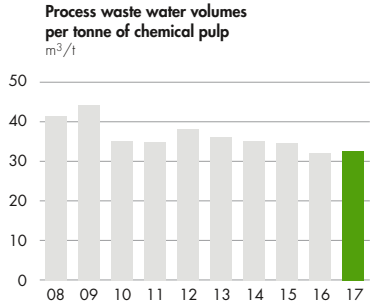
Over the last years, air emissions stayed on a quite stable level. In 2017, slight improvements were achieved for the specific emission of fossil carbon dioxide, nitrogen oxide, sulphur dioxide and particulates, while total reduced sulphur stayed in the same good level.

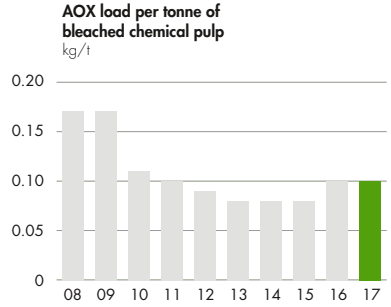
Water

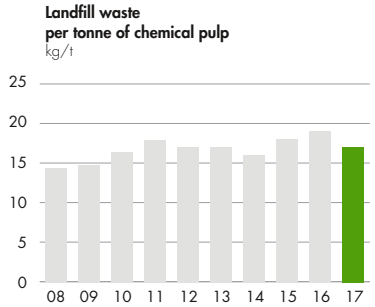
The waste water volume per tonne of pulp decreased by 21% over the last ten years, but increased very slightly in 2017. Parameters for the effluent load, like COD and AOX also decreased significantly over the last ten years by 37%, and 48% respectively.

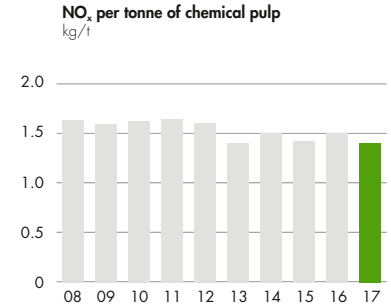
Waste

The total waste per tonne of chemical pulp decreased from 50 kg to 44 kg. Also the waste recycling rate increased to 62% in 2017 from 60% in 2016. In UPM Fray Bentos, the disposal of excessive sludge came to the end as the new biosludge dryer started up. The dried bioludge is used as a soil improver in the forestry plantations. Green liquor dregs are one of the most challenging side streams of UPM's pulp production. For several decades, efforts have been made to find a cost-efficient and sustainable alternative to landfill disposal. A new product innovation is currently being tested together with partners, and initial results have been promising. A possible breakthrough would significantly reduce the amount of waste from pulp mills in Finland in the near future.









Read more at www.upmpulp.com

Paper

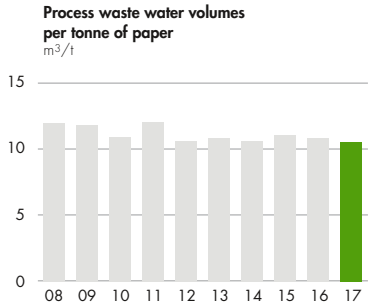
UPM closed 305,000 tons of magazine paper capacity closing one paper machine at UPM Steyrermühl in Austria and one at UPM Augsburg in Germany and contract manufacturing ceased at the divested Schwedt newspaper mill in Germany. Also 128,000 tons of magazine paper capacity at the UPM Blandin mill in Minnesota, USA was closed.

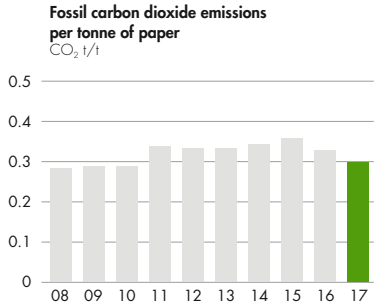
Fibre

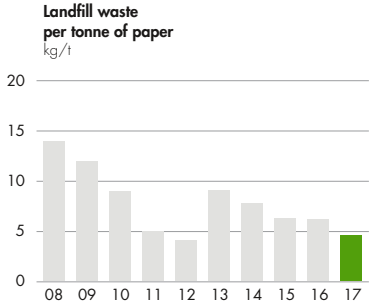
In 2017 30% of all fibre used in UPM's paper production was recycled fibre. In 2017, 85% of the fibres used in paper production was from FSC® and/or PEFC™ certified sources, the remainder came from controlled sources.

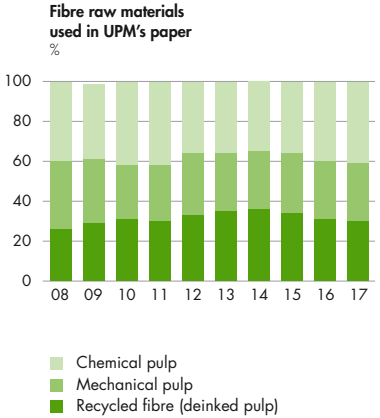
Water

During the last ten years, the COD load (chemical oxygen demand) per tonne of paper has decreased by 32%, and process waste water volume per tonne of paper by 10%. As the waste water volume and COD load are already on a rather low level, further improvements of the volumes per tonne of product are getting more and more challenging. However, slight improvement was









Supplier assessments and requirements

UPM requires its suppliers and third party intermediaries such as agents, consultants, advisers and joint venture partners to apply the principles of UPM's Code of Conduct and to fulfill the criteria concerning social and environmental responsibility. These requirements are defined in the UPM Supplier and Third Party Code, and suppliers are qualified against these requirements.

UPM's supplier risk assessment covers financial, quality, environmental, social, economic and delivery related risks. The human rights-related risk assessment of suppliers has been enhanced since 2003. Based on the risk assessments, UPM selects the suppliers whose performance is assessed in more detail. UPM uses tools such as annual questionnaires, joint development plans and also supplier audits which are initiated based on identified risks or gaps in supplier performance.

achieved compared to 2016 in waste water volume, COD, as well as in TSS (total suspended solids).

Air

In 2017, emissions of NO_x and SO_2 per tonne of paper slightly decreased compared to 2016.

Emissions of fossil CO_2 per tonne of paper decreased from 311 kg in 2016 to 300 kg in 2017 due to increased share of biomass based fuels.

Energy

The electricity consumption per tonne of paper remained rather stable compared to 2016, but has decreased by 13% during the last ten years due to continuous improvement of energy efficiency.

Waste

The amount of landfilled waste per tonne of paper was reduced by 23% in 2017. During the last ten years the amount of landfilled waste per tonne of paper has decreased by 55%. However, from 2012 to 2013 the amount of landfilled waste increased significantly. The reason was that former recycling possibilities for ash ceased at UPM Shotton. Starting from 2014, new methods of recycling were established, with further options still being investigated. Ash results from energy generation and is the biggest waste fraction for UPM's paper mills. Overall for UPM's paper mills in 2017, over 90% of waste was recycled or recovered.

Read more at
www.upmpaper.com

Clean Run

Clean Run aims to improve the environmental impact of all UPM operations. The goal is to significantly improve the current level of environmental performance and awareness, including better risk management.

The campaign has been visible in the pulp and paper mills since 2011, and has become a proactive way of managing environmental operations at mills. Systematic reporting and follow-up of environmental deviations, including reporting of environmental observations, are in active use at all pulp and paper mills. Company-wide guidelines for producing reports according to five defined categories have been implemented. The five categories range from 1 (minor) to 5 (severe). Together with improved information sharing, Clean Run audits have helped to identify development issues and related best practices. With all of the actions taken, the "Clean Run Way of Thinking" is today part of daily routines.

In 2017, no serious environmental incidents occurred at UPM's pulp and paper mills. However, several minor temporary deviations from permit limits did arise. Those were immediately reported to authorities and corrective measures were taken to prevent similar situations from occurring again.

Best Available Techniques (BAT)

Industry-specific reference documents are developed by the European IPPC Bureau. The document for the pulp and paper industry has been updated, and the conclusions were published by the EU Commission in September 2014. The BAT conclusions are now the reference for setting permit conditions for installations covered by the EU's Industrial Emissions Directive. The implementation period is four years. UPM is benchmarking its production lines against the BAT values.

Environmental parameters 2017

Core indicators

UPM paper mills

	Scope: all UPM paper mills		Scope: EMAS-registered mills	
Production	9,220,000 t		8,900,000 t	
	Total amount per year	Indicator per tonne of paper	Total amount per year	Indicator per tonne of paper
Energy efficiency				
Electricity consumption	11,700 GWh	1,300 kWh/t	11,100 GWh	1,200 kWh/t
Steam consumption	10,700 GWh	1,200 kWh/t	10,100 GWh	1,100 kWh/t
Own energy generation	39% renewable share		39% renewable share	
Purchased energy	21% renewable share		20% renewable share	
Material efficiency				
Chemical pulp	2,560,000 t	280 kg/t	2,510,000 t	280 kg/t
Mechanical pulp	1,720,000 t	190 kg/t	1,720,000 t	190 kg/t
Recycled fibre pulp	1,820,000 t	200 kg/t	1,820,000 t	200 kg/t
Minerals	2,280,000 t	250 kg/t	2,180,000 t	240 kg/t
Binder	266,000 t	29 kg/t	254,000 t	29 kg/t
Water				
Water intake	217,000,000 m^3	24 m^3/t	194,000,000 m^3	22 m^3/t
Process waste water	99,100,000 m^3	11 m^3/t	91,800,000 m^3	10 m^3/t
COD	27,900 t	3 kg/t	27,000 t	3 kg/t
TSS	2,600 t	0.3 kg/t	2,500 t	0.3 kg/t
Waste[1]				
Waste, total	774,000 t	84 kg/t	749,000 t	84 kg/t
of which:				
ash[2]	383,000 t	41 kg/t	374,000 t	42 kg/t
sludges	254,000 t	28 kg/t	238,000 t	27 kg/t
wood residues	69,600 t	8 kg/t	69,200 t	8 kg/t
deinking residues[3]	18,400 t	2 kg/t	18,400 t	2 kg/t
others	49,300 t	5 kg/t	49,000 t	6 kg/t
Recycling rate	93%		95%	
Hazardous waste	3,400 t	0.4 kg/t	3,400 t	0.4 kg/t
Emissions				
CO_2 fossil	2,780,000 t	300 kg/t	2,670,000 t	300 kg/t
NO_x, as NO_2	3,800 t	0.4 kg/t	3,400 t	0.4 kg/t
SO_2	690 t	0.1 kg/t	620 t	0.1 kg/t
Particulates	84 t	0.01 kg/t	73 t	0.01 kg/t

Core indicators

UPM chemical pulp mills

	Scope: all UPM pulp mills	
Production	3,570,000 t	
	Total amount per year	Indicator per tonne of chemical pulp
Energy efficiency		
Electricity consumption	2,100 GWh	600 kWh/t
Steam consumption	10,800 GWh	3,000 kWh/t
Own energy generation	94% renewable share	
Purchased energy	98% of energy is generated internally	
Material efficiency		
Wood	16,100,000 m^3	5 m^3/t
Process chemicals[4]	429,000 t	120 kg/t
Water		
Water intake	216,000,000 m^3	61 m^3/t
Process waste water	116,000,000 m^3	33 m^3/t
COD	38,900 t	11 kg/t
TSS	1,500 t	0.4 kg/t
AOX	320 t	0.1 kg/t
Waste[1]		
Waste, total	158,000 t	44 kg/t
of which:		
sludges	26,400 t	7 kg/t
green liquor dregs	47,100 t	13 kg/t
wood residues	70,300 t	20 kg/t
lime	4,600 t	1 kg/t
others	9,500 t	3 kg/t
Recycling rate	62%	
Hazardous waste	440 t	0.1 kg/t
Emissions		
CO_2 fossil	281,000 t	79 kg/t
NO_x, as NO_2	4,800 t	1 kg/t
SO_2	190 t	0.1 kg/t
Particulates	510 t	0.1 kg/t
TRS	77 t	0.02 kg/t

1) Reported in dry tonnes
2) Including ash, which is considered as hazardous waste in the UK
3) Non-fibrous residues, e.g. CDs, plastic
4) Main chemicals used: oxygen gas, sodium hydroxide, sodium chlorite or chlorate, sulphuric acid, limestone, hydrogen peroxide

For the core indicators of 2016, please see last year's environmental statement.

For indicator for biodiversity and societal issues, please see the mill supplements where e.g. information about the mill area is included.

All mill supplements are available at www.upm.com/responsibility.

Glossary

Activated sludge process
A three-stage biological effluent treatment method.

AOX, Adsorbable organic halogen compounds
AOX represents the total amount of chlorine bound to organic compounds in waste water. Such compounds occur naturally, but are also formed in conjunction with the bleaching of chemical pulp. AOX should be limited to a level where it has minimum environmental impacts.

BAT, Best available techniques
The best available technology that allows for solutions that are technically, economically and environmentally the most efficient and advanced.

BOD, Biological oxygen demand
COD, Chemical oxygen demand
The effluent, or waste water of pulp and paper mills includes organic substances which consume oxygen during biodegradation. Low oxygen content in fresh and sea water can have an adverse effect on plant and animal life. BOD refers to the amount of oxygen consumed in the biological decomposition of organic compounds. COD refers to the amount of oxygen consumed in the complete chemical oxidation of organic compounds.

CO_2, Carbon dioxide
Combustion product of carbon. Fossil carbon dioxide emissions arise from fossil fuels like coal, oil and petrol.

CHP, Combined heat and power technology
Combined heat and power (CHP) production (or cogeneration) is when both electricity and heat are produced at a thermal power plant. The heat is used, for example, in industry or district heating, or as process steam.

Chain of Custody (COC)
An unbroken trail of documentation to guarantee the identity and integrity of the data used as, for example, in demonstrating the origin of wood.

Chemical pulp
Generic name for wood-based fibres separated from each other by "cooking" wood chips or plants in hot alkaline or acidic solutions of various chemicals.

Consumption impact
Consumption through net income generated by employees working at the plant and employees working at the value chain of the plant (typically working in other industries). Calculated using a model build by The Research Institute of the Finnish Economy (Etla).

Deinking
The process whereby the ink and impurities are removed from recovered paper. Deinked pulp: see recycled fibre pulp.

EMAS, Eco-Management and Audit Scheme
Voluntary environmental management system for companies and other organisations to improve, evaluate and report on their environmental performance on an annual basis. The environmental review is approved by a third-party accredited EMAS verifier.

Forest certification
An independent review process that determines whether a forest is managed in a responsible manner. There are two global forest certification schemes: FSC® (Forest Stewardship Council®) and PEFC™ (Programme for the Endorsement of Forest Certification).

Graphic recovered paper
Mainly white paper collected from households, e.g. newspapers, magazines, catalogues and copy paper.

ISO 9001
Quality management system standard published by the International Organisation for Standardisation (ISO). This is a voluntary, international and third-party certified system.

ISO 14001
Environmental management system standard published by the International Organisation for Standardisation (ISO). This is a voluntary, international and third-party certified system.

ISO 50001
Energy management system standard published by the International Organisation for Standardisation (ISO). This is a voluntary, international and third-party certified system.

Lost-time accident frequency (LTAF)
Lost-time accidents per million hours worked (Including UPM employees and temporary/agency-hired workers). (The number of accidents at work resulting in absence or disability one or more days)/(Actual hours worked)*1,000,000. Lost time accident type excludes modified duties, medical treatments and first aid cases, but includes fatal accidents.

Mechanical pulp
Generic name for wood-based fibres separated from each other mechanically.

N, Nitrogen
P, Phosphorus
N and P are chemical elements essential for plant and animal life. Both substances occur naturally in wood and are often added as a nutrient in biological treatment plants. Excessive levels released into watercourses can cause nutrient enrichment, i.e., eutrophication, which accelerates the growth of algae and other vegetation.

NO_x, Nitrogen oxides
These gases are produced during combustion. In moist air, nitrogen oxides can form nitric acid which, in turn, is precipitated as "acid rain". This nitrogen-containing rain also has a fertilising effect, i.e. eutrophication.

OHSAS 18001
Specifications for an Occupational Health and Safety Management System.

Recycled fibre pulp
Fibres and fillers retrieved from recovered paper. If the recovered paper is deinked, the processed pulp is also called deinked pulp.

SO_2, Sulphur dioxide
This gas is generated by burning sulphur-containing fuels. On contact with moist air, SO_2 forms sulphuric acid, which contributes to "acid rain" and acidification.

Supplier Qualification
UPM suppliers are qualified against the UPM Supplier and Third Party Code that defines suppliers' minimum compliance requirements in terms of responsibility with regard to matters such as environmental impact, human rights, labour practices, health and safety, and product safety. Supplier spend in EMAS mill supplements covers all UPM business-to-business spend excluding wood and wood-based biomass sourcing. Wood sourcing figures are not currently available for each mills, but only for regions.

Sustainable forest management
In the long term, a sustainably managed forest means that it is not harvested more than it grows. Sustainably managed forests maintain their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil (now and in the future), relevant ecological, economic and social functions, at local, national and global levels without damaging other ecosystems.

Total Recordable Injury Frequency (TRIF)
TRIF includes LTA cases as well as modified duty cases and accidents requiring medical treatment, and it thus higher that LTAF. Includes UPM employees and temporary/agency hired workers. Calculation is as follows: ('LTA at work excluding contractors (number of LTAs which are one or more days)'+'Modified duty'+'Medical treatment')/'Actual hours worked (UPM)'*1,000,000. Total Recordable Injury type excludes first aid cases.

TRS, Total reduced sulphur
Reduced sulphur compounds that usually cause odour problems and that are released, for example, during chemical pulp production.

TSS
TSS are solid materials, including organic and inorganic, that are suspended in the water.

Revalidation statement

As accredited or licensed environmental verifiers,
– BSI (UK-V-0002) for Caledonian and Shotton
– ECOCERT (FR-V-0010) for Chapelle Darblay
– Inspecta Sertifiointi Oy (FI-V-0001) for Changshu, Fray Bentos, Jämsä River Mills, Kaukas, Kymi, Pietarsaari, Tervasaari and Rauma
– Quality Austria (A-V-0004) for Steyrermühl
– TÜV NORD CERT Umweltgutachter GmbH (DE-V-0263) for Augsburg, Ettringen, Hürth, Nordland, Plattling and Schongau

have examined the environmental management systems of each mill mentioned above, the information contained in the updated Environmental and Societal Responsibility 2017 Reports, the information in the corporate part, as far as it concerns the respective mills, as well as the information used for the calculation of UPM Corporate level EMAS core indicators.

Following these examinations and the examination of the Updated UPM Corporate Environmental Statement 2017 on 21/06/2018 Inspecta Sertifiointi Oy as the coordinating environmental verifier of this common EMAS validation herewith confirms that the environmental management systems and the Updated UPM Corporate Environmental Statement 2017 together with the updated Environmental and Societal Responsibility 2017 reports comply with the requirements of the EU's EMAS regulation (EC) No. 1221/2009.

UPM

www.upm.com

6/2018