

Environmental performance in 2016



UPM Schongau



Through the renewing of the bio and forest industries, UPM is building a sustainable 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 19,300 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

UPM Schongau

UPM Schongau is sited on a bend on the Lech river in the Southern German town of Schongau.

The site was founded in 1887. In 1962, one of the world's first flotation deinking systems went on line in Schongau. This processing technology was a major breakthrough for the recycling of used graphic paper into new printing paper.

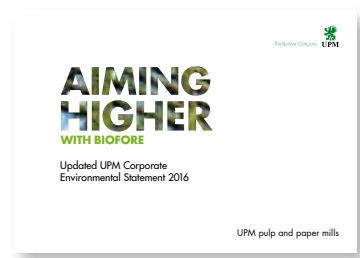
Today, UPM Schongau produces printing paper in reels for newspapers, newspaper supplements, advertisers, brochures, magazines and catalogues on three paper machines. Recovered paper is in terms of volume the most important raw material at the site. Other raw materials used include sawmill residues and pigments as fillers. Pigments are partly made on the premises by the local supplier SMI.

The mill's energy generation plants were modernised. Power and steam are generated in combined heat and power plants. The existing power plants were complemented with a modern, highly efficient gas and steam turbine, increasing the mill's share of self-generated electricity.

A small part of the power consumption is covered with hydropower.

The wastewater from the production process is treated in the on-site effluent treatment plant.

Production capacity	Up to 760,000 tonnes per annum
Personnel	About 560 (total heads as at 31 December 2016)
Products	Standard and improved newsprint as well as supercalendered uncoated paper UPM Brite UPM News UPM ReCat UPM Eco UPM EcoPrime UPM EcoBasic UPM Book
Certificates	EMAS – EU Eco-Management and Audit Scheme ISO 14001 – Environmental Management System Standard ISO 9001 – Quality Management System Standard ISO 50001 – Energy Management System Standard OHSAS 18001 – Occupational Health and Safety System Standard PEFC™ Chain of Custody – Programme for the Endorsement of Forest Certification FSC® Chain of Custody – Forest Stewardship Council® <i>All certificates can be found from UPM's Certificate Finder (available at www.upm.com/responsibility)</i>
Environmental labels	EU Ecolabel (EU Flower) and Blue Angel eco-label (RAL-UZ 14 or 72) for UPM News and UPM EcoBasic



UPM Schongau Environmental Performance in 2016 is a supplement to the Corporate Environmental Statement of UPM's pulp and paper mills (available at www.upm.com) and provides mill-specific environmental performance data and trends for the year 2016. The annually updated mill supplements and the UPM Corporate Environmental Statement together form the joint EMAS Statement of UPM Corporation. The next Corporate Environmental Statement and also this supplement will be published in 2018.



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Environmental year in 2016

UPM Schongau's papermaking operations have an impact on people and environment at the site. We take this responsibility very seriously. This is why protecting the environment is central to our daily work.

As far back as the early sixties the commissioning of a deinking plant set the scene for sustainable resource conservation. Today the volume of paper recycled is roughly equivalent to the volume of paper produced. Some paper grades require an input of virgin fibres which, since the end of 2004, have come mostly from sustainable forestry. Nearly closed water circuits, heat recovery systems as well as a high recovery rate of process residue generated at the site have for a long time been the results of our environmentally responsible way of operating.

Papermaking is an intensive energy using process. This is why we have made great efforts in recent years to improve the mill's energy efficiency. In the spring of 2012, UPM Schongau's energy management successfully gained certification to DIN EN ISO 50001 and has been continu-

ously further developed ever since. In this way UPM Schongau demonstrates efficient energy and resource use.

Bioler ash was used as a product for the most part. Applications include use as a soil stabiliser, as an additive for construction materials and as a replacement for soda lye in our own production plants.

In 2016 there were two complaints about noise disturbance and one about odour.

Occupational health and safety

Intensive work continued to strengthen our occupational health and safety culture. Special focus was on improving the assessment of risks prior to starting a job

through a permits-to-work system and ad-hoc risk assessments. In the field of health management, proven activities such as health day, workplace programmes and back-strengthening exercises continued. Many employees used the opportunity to lease bicycles under the business bike scheme.

Community involvement

Last year, UPM Schongau supported, amongst other things, some kindergartens, schools, cultural events and associations near the mill.

Work is continuing at UPM Schongau to further develop and improve environmentally relevant processes.



Wolfgang Ohnesorg,
General Manager



Ute Soller,
Manager OHS/Environment/
Management Systems



Martin Heinrich,
Management System
Representative

Air

In 2016, airborne emissions remained largely constant on a low level. Energy generated from the incineration of process residue and used wood reduced our natural gas usage. The high proportion of mostly renewable fuels contributes to cutting fossil CO₂ emissions.

The mean carbon monoxide (CO) emission concentrations from our fluidised bed boiler decreased slightly. The remaining parameters remained approximately constant on a low level.

In the emissions from the fluidised bed boiler, there were 8 deviations from half-

hourly mean value permit limits. (3 x CO, 4 x NO_x, 1 x dust), which were partly caused by problems with the solid fuel supply and partly by adjustments of operating parameters after the revision of the boiler. The daily mean value permit limit for dust was exceeded once each at fluidised bed boiler and at the steamblock. However, the half-hourly mean value concentrations were in line with the permit limits for 99.9% of the time.

The annual particulate matter loads remains well below the permit limit of 10 mg.

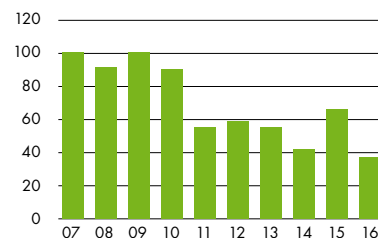
Emissions from the combined heat and power plant 2016

	Limit value (mg/m ³ Ntr)	Mean value of measurements (mg/m ³ Ntr)
Fluidised bed boiler/Continuous measurement		
CO	50	16
Particulate matter	10	0.4
SO ₂	50	0.05
NO _x	200	152
Hg _{tot}	0.03	0.002
HCL	0.6	0.01
Fluidised bed boiler/One-time measurement		
C _{tot}	20	< 1.5
HF	1	< 0.2
Cd, Ti	0.05	< 0.003
Sb, As, Pb, Co, Cr, Cu Mn, Ni, V, Sn	0.5	0.0067
PCDD/F	0.1 ng/m ³ Ntr	0.003
Steam boiler/Continuous measurement		
CO	50	3.5
NO _x	150	90
Gas power plant/Continuous measurement		
CO	100	16
NO _x	50	31
Steamblocks		
CO	50	4.5
NO _x	110	85

n.d. = not detectable

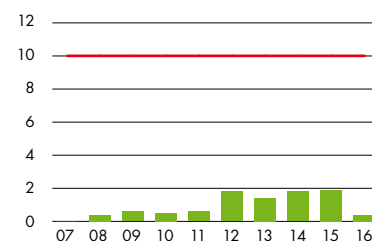
Nitrogen oxides, NO_x

Development kg/tonne of paper in %



Particulates

mg/Nm³



■ Annual average

Water

A considerable amount of water from the Lech river is required to cool power stations, steam turbines, production machinery and heat recovery systems. Cooling water is not contaminated during use and can be discharged back directly into the river. The heat discharged into the river is continuously monitored. The process water used in paper production is bank filtrate from the Lech river. Only a fraction of the water is discharged as wastewater after it

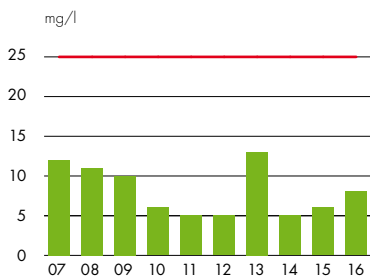
has been recycled within the process several times.

The capacity of the on-site multi-stage effluent treatment plant corresponds to that of a treatment plant for 420,000 people. Effluents are first cleaned in a chemical-mechanical treatment stage and then in an anaerobic IC reactor. Finally, they are treated aerobically in an activated sludge tank and a clarifier tank.

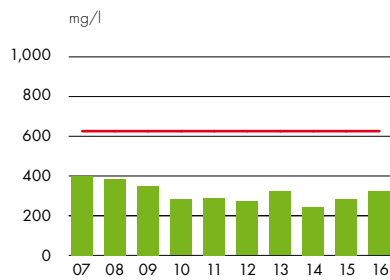
The quality of the treated effluents is continuously monitored, both internally and by the authorities in charge.

The permit limit for nitrogen was slightly exceeded on four days and the permit limit for BOD₅ on one day. This was communicated to the authorities and corrective action taken.

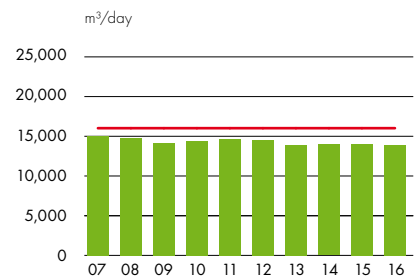
Biological oxygen demand, BOD₅



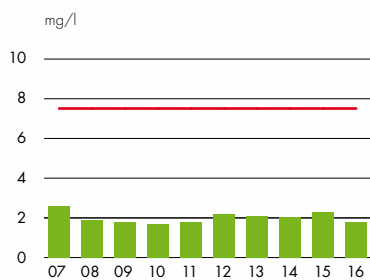
Chemical oxygen demand, COD



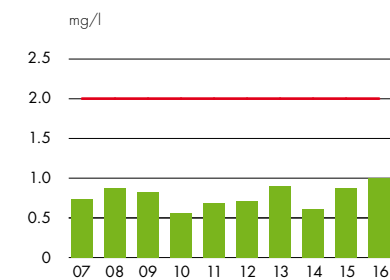
Effluent volume



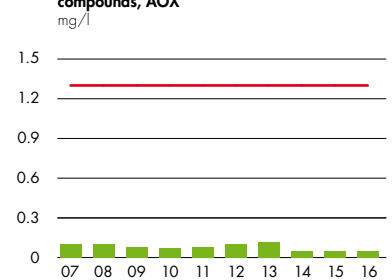
Nitrogen (inorganic), N



Phosphorus, P



Adsorbable organic halogen compounds, AOX



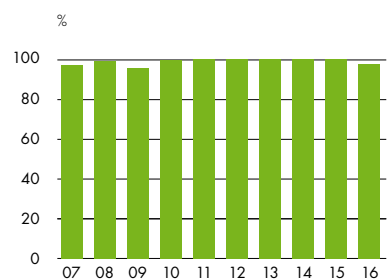
■ Annual average — Limit value

Waste

Ash from the fluidised bed boiler operating on solids constitutes the largest waste fraction at UPM Schongau. In 2016, 98% of the ash was recovered and sold

mostly to the construction materials and cement industries for reuse. However, the recovery rate is subject to seasonal and cyclical variations.

Recovery rate





Environmental parameters 2016

The figures related to production as well as raw material and energy consumption are published as aggregated figures on group level in the UPM Corporate Environmental Statement.

Production capacity	Paper	Up to 760,000 t (3 paper machines)
Raw materials and additives	Recovered paper Wood chips Process chemicals Operating supplies	See UPM Corporate Environmental Statement for more information
Energy	Renewable fuels Fossil fuels Purchased power Hydropower	28% 72% See UPM Corporate Environmental Statement for more information
Emissions to air	Carbon dioxide, CO ₂ (fossil) Nitrogen oxides, NO _x Sulphur dioxide, SO ₂ Particulates Carbon monoxide, CO	302,392 t 171 t 0.04 t 0.08 t 46 t
Water intake	Process, cooling and drinking water – of which cooling water – of which drinking water	26,545,146 m ³ 20,782,319 m ³ 19,524 m ³
Discharges to water	Effluent volume Chemical oxygen demand, COD Biological oxygen demand, BOD ₅ Phosphorus, P Nitrogen (inorganic), N Adsorbable organic halogen compounds, AOX	5,055,652 m ³ 1,639 t 40 t 5.3 t 6.0 t 0.6 t
Waste*	Total volume (without hazardous waste) of which – deinking sludge – ash – fluidised bed sand – metal – wood residue – other Hazardous waste Recovery rate	23,234 t 10,895 t 3,243 t 2,865 t 1,350 t 2,682 t 2,199 t 563 t 97.1%
Size of mill area	Built on or sealed	35 ha



*incl. moisture

Performance against targets in 2016

Target	Target achieved?
Airborne emissions Reduce temporary emission peaks from the fluidised bed boiler by refurbishment and optimisation. First part of the refurbishment to be completed by the end of 2016.	Partly, rebuilding part 1 was done in 2016. Start up was in October 2016. Nitrogen emissions are showing lower level.
Create concept for optimising co-generation plants operating on biogas from the effluent treatment plant.	Amount of electricity produced was increased by 7% by installation of a control butterfly valve.
Offer bicycle leasing scheme for employees.	Yes, 83 leasing contracts were signed.
Waste Maintain high quality of ash used as a product following the refurbishment of the fluidised bed boiler, ensuring that 100% of both boiler and filter ash continue to be used.	Almost achieved. 98% of the ash was used as product.
Effluents Ensure good quality of effluents discharged from the treatment plant in all process conditions.	Partly; on 361 of 365 days effluent quality was good.
Material efficiency Further increase the overall efficiency of our paper machines (target to be defined internally within the framework of the target setting process).	Yes, efficiency was increased.

Current targets

Targets and measures	Deadline	Department responsible
Energy Rebuild of TMP in September in order to reduce specific energy consumption per tonne of thermo-mechanical-pulp by 5%.	31.12.2017	Manager Production
Water Maintain voluntarily reduced (control value by 20%) COD concentration discharged from the treatment plant to the river beginning in April.	31.12.2017	Manager waste water plant
Waste Reduce losses from secondary flotation by 0,3% (precondition invest approved).	31.12.2017	Manager Production
Air emissions Create concept to reduce formaldehyde emissions from the cogeneration plants operation on biogas. (new limit = 30 mg/Nm ³).	31.12.2017	Manager power plant
Environmental incidents- Clean Run category 3, 4 and 5 Cut in halve the number of incidents (2017: 4; 2018: 2). Analyse incidents from last years, define and train measures for waste water treatment and power plant	31.12.2017	Manager waste water plant Manager Power Plant



Environmental verifier's declaration on verification and validation activities

Environmental verifier, Astrid Günther (DE-V-0357), acting for TÜV NORD CERT Umweltgutachter GmbH, licensed for the scope NACE Code 17.12 (papermaking), declares to have verified whether the site UPM GmbH, Schongau mill, Friedrich-Haindl-Strasse 10, 86956 Schongau, Germany, as indicated in the Environmental Statement 2016 of the mentioned site (registration no. FI-000058), meets all requirements of Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community Eco-Management and Audit Scheme (EMAS).

By signing this declaration, I declare that:

- the verification and validation has been carried out in full compliance with the requirements of Regulation (EC) No 1221/2009,
- the outcome of the verification and validation confirms that there is no evidence of non-compliance with applicable legal requirements relating to the environment,
- the data and information of the Environmental Statement 2016 of UPM GmbH, Schongau mill, reflect a reliable, credible and

correct image of all the activities of UPM GmbH, Schongau mill, within the scope mentioned in the Environmental Statement 2016.

This document is not equivalent to EMAS registration. EMAS registration can only be granted by a Competent Body under Regulation (EC) No 1221/2009. This document shall not be used as a stand-alone piece of public communication.

Essen, 13.04.2017

Astrid Günther
Environmental verifier
DE-V-0357
TÜV NORD CERT Umweltgutachter GmbH

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