

# ENVIRONMENTAL performance in 2015



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 Paper Asia, UPM Paper Europe and North America and UPM Plywood. Our products are made of renewable raw materials and are recyclable. We serve our customers worldwide. The group employs around 19,600 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](http://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.

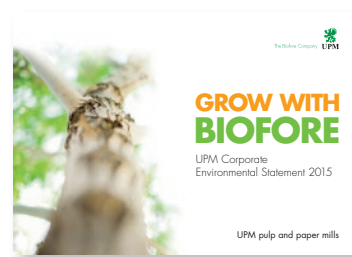
Today, UPM Schongau produces printing paper in reels for newspapers, newspaper supplements, advertisers, brochures, magazines and catalogues on three paper machines. Recovered paper is in terms of volume the most important raw material at the site. Other raw materials used include sawmill residues and 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.

<b>Production capacity</b>	Up to 760,000 tonnes per annum
<b>Personnel</b>	About 560 (total heads as at 31 December 2015)
<b>Products</b>	Standard and improved newsprint as well as supercalendered uncoated paper UPM Brite                      UPM News UPM Eco                         UPM EcoPrime UPM EcoBasic                 UPM Book
<b>Certificates</b>	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 <a href="http://www.upm.com/responsibility">www.upm.com/responsibility</a>)</i>
<b>Environmental labels</b>	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 2015 is a supplement to the Corporate Environmental Statement of UPM's pulp and paper mills (available at [www.upm.com](http://www.upm.com)) and provides mill-specific environmental performance data and trends for the year 2015. 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 2017.



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## Environmental year in 2015

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

The utilisation of boiler ash as a product was increased to 100%. 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 2015 there were two complaints about noise disturbance.

Actions are ongoing to increase awareness of workplace safety culture. The focus in 2015 was on safety walks and on identifying risks in work preparation.

In the field of health protection, the planned actions, like health days, back therapy training and yoga as well as a pilot project concerning job analysis and a health circle were implemented in one department.

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



Caius Murtola,  
General Manager



Ute Soller,  
Manager OHS/Environment/  
Management Systems



Martin Heinrich,  
Management System  
Representative



# Air

In 2015, 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 CO<sub>2</sub> emissions.

The mean carbon monoxide (CO) and nitrogen oxides (NO<sub>x</sub>) 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 4 deviations from permit limits (1 x half-hourly mean value of

CO concentration, 2 x half-hourly mean value of NO<sub>x</sub>; 1 x daily average of NO<sub>x</sub> concentration), which were mostly caused by problems with the solid fuel supply and resulting load fluctuations. However, the half-hourly mean value concentrations were in line with the permit limits for 99.9% of the time.

Nitrogen oxide emissions rose slightly due to the commissioning of the new gas turbine and the increase in self-generation of electricity.

The annual particulate matter loads increased slightly. But at 1.9 mg, the mean concentration remains well below the permit limit of 10 mg.

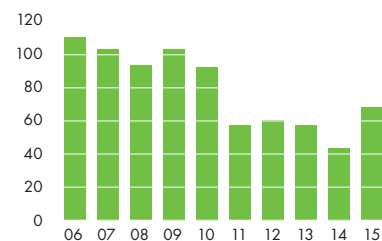
## EMISSIONS FROM THE COMBINED HEAT AND POWER PLANT 2015

	Limit value (mg/m <sup>3</sup> Ntr)	Mean value of measurements (mg/m <sup>3</sup> Ntr)
<b>Fluidised bed boiler/Continuous measurement</b>		
CO	50	6
Particulate matter	10	1.9
SO <sub>2</sub>	50	0.02
NO <sub>x</sub>	200	160
Hg <sub>tot</sub>	0.03	0.001
HCL	0.6	0.003
<b>Fluidised bed boiler/One-time measurement</b>		
C <sub>tot</sub>	20	< 2
HF	1	0.4
Cd, Ti	0.05	< 0.1
Sb, As, Pb, Co, Cr, Cu Mn, Ni, V, Sn	0.5	0.001
PCDD	0.1 ng/m <sup>3</sup> Ntr	0.001
PCDF	0.1 ng/m <sup>3</sup> Ntr	n.d.
<b>Steam boiler/Continuous measurement</b>		
CO	50	6.7
NO <sub>x</sub>	150	106
<b>Gas power plant/Continuous measurement</b>		
CO	100	44
NO <sub>x</sub>	50	26

n.d. = not detectable

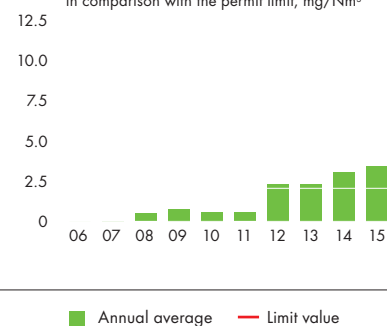
## NITROGEN OXIDES, NO<sub>x</sub>

Development kg/tonne of paper in %



## PARTICULATES

Annual mean values from the fluidised bed boiler in comparison with the permit limit, mg/Nm<sup>3</sup>



# 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

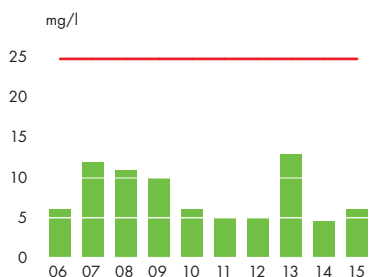
has been recycled within the process several times.

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.

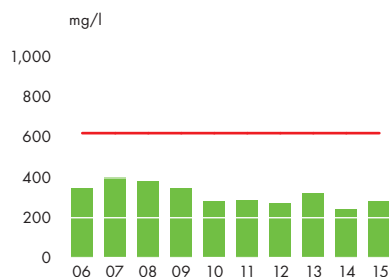
The quality of the treated effluents is continuously monitored, both internally and by the authorities in charge.

The permit limit for nitrogen was slightly exceeded on two days and the permit limit for BOD<sub>5</sub> on one day. This was communicated to the authorities and corrective action taken.

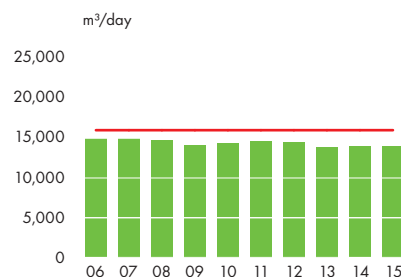
**BIOLOGICAL OXYGEN DEMAND, BOD<sub>5</sub>**



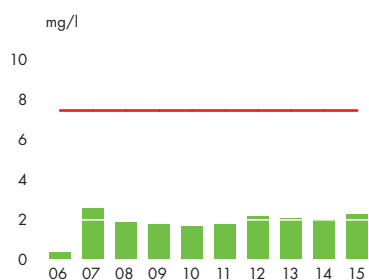
**CHEMICAL OXYGEN DEMAND, COD**



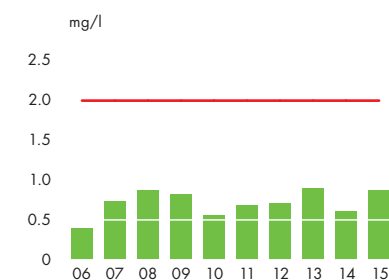
**EFFLUENT VOLUME**



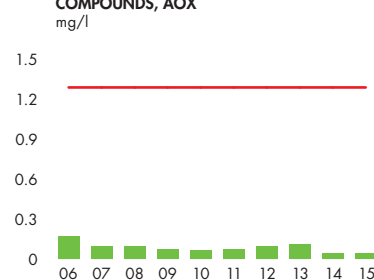
**NITROGEN (INORGANIC), N**



**PHOSPHORUS, P**



**ADSORBABLE ORGANIC HALOGEN COMPOUNDS, AOX**



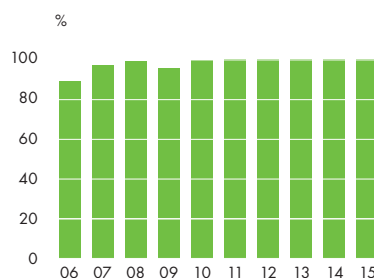
■ Annual average — Limit value

# Waste

Ash from the fluidised bed boiler operating on solids constitutes the largest waste fraction at UPM Schongau. In 2015, 100% 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 2015

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.

<b>Production capacity</b>	Paper	Up to 760,000 t (3 paper machines)
<b>Raw materials and additives</b>	Recovered paper Wood chips Process chemicals Operating supplies	See UPM Corporate Environmental Statement for more information
<b>Energy</b>	Renewable fuels Fossil fuels Purchased power Hydropower	28% 72% See UPM Corporate Environmental Statement for more information
<b>Emissions to air</b>	Carbon dioxide, CO <sub>2</sub> (fossil) Nitrogen oxides, NO <sub>x</sub> Sulphur dioxide, SO <sub>2</sub> Particulates Carbon monoxide, CO	305,118 t 226 t 0.1 t 1.7 t 99 t
<b>Water intake</b>	Process, cooling and drinking water – of which cooling water – of which drinking water	36,654,408 m <sup>3</sup> 30,838,228 m <sup>3</sup> 40,291 m <sup>3</sup>
<b>Discharges to water</b>	Effluent volume Chemical oxygen demand, COD Biological oxygen demand, BOD <sub>5</sub> Phosphorus, P Nitrogen (inorganic), N Adsorbable organic halogen compounds, AOX	5,087,290 m <sup>3</sup> 1,432 t 30 t 4.6 t 10.3 t 0.4 t
<b>Waste*</b>	Total volume (without hazardous waste) of which – ash – fluidised bed sand – metal – wood residue – other – hazardous waste Recovery rate	96,139 t  88,271 t 3,880 t 1,089 t 1,906 t 993 t 170 t 99.98%
<b>Size of mill area</b>	Built on or sealed	35 ha

\*incl. moisture



# Performance against targets in 2015

TARGET	TARGET ACHIEVED?
<b>Energy</b> Heat recovery in general Various options identified through preparatory project Evaluate options and plan details	Various possibilities investigated. Project not economically viable under the current economic framework conditions. Results documented for possible later use.
<b>Waste</b> Further increase the amount of ash that is used as a product (by at least 50% in comparison with 2014)	100% of the boiler ash used as a product.
<b>Airborne emissions</b> Reduce temporary emission peaks from the fluidised bed boiler by refurbishment and optimisation Start planning details in 2015; completion by the end of 2018	Yes, details planned. First part of the refurbishment to be carried out from mid 2016.

## Current targets

TARGETS AND MEASURES	DEADLINE	DEPARTMENT RESPONSIBLE
<b>Airborne emissions</b> 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.	12/2018	Manager Power Plant
Create concept for optimising co-generation plants operating on biogas from the effluent treatment plant	12/2016	Manager Pulp Production
Offer bicycle leasing scheme for employees	12/2016	Health management
<b>Waste</b> 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.	12/2016	Manager Power Plant
<b>Effluents</b> Ensure good quality of effluents discharged from the treatment plant in all process conditions	12/2016	Manager Pulp Production
<b>Material efficiency</b> Further increase the overall efficiency of our paper machines (target to be defined internally within the framework of the target setting process)	12/2016	Manager Production



### Environmental verifier's declaration on verification and validation activities

Environmental verifier, Dr. Detlef Nehm (DE-V-0223), 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 2015 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 2015 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 2015.

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, 05 April 2016

Dr. Detlef Nehm  
 Environmental verifier  
 DE-V-0223  
 TÜV NORD CERT Umweltgutachter GmbH

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