UPM BIOFORE
BEYOND FOSSILS

UPM Ettringen

ENVIRONMENTAL AND SOCIETAL RESPONSIBILITY 2018

UPM Ettringen

UPM Ettringen is sited on the small Wertach river, on the outskirts of Ettringen in the Unterallgäu region in Bavaria.

Originally founded in 1897 as a mechanical pulp mill, the site has been producing paper since 1910.

The mill in Ettringen started using recovered paper as a fibre source as far back as 1963. In the 1990s, the mill set a new quality standard in the manufacture of magazine papers by developing online-calendered rotogravure and offset papers with a high recycled content.

Today, the site produces magazine papers and newsprint on one paper machine with an annual capacity of up to 300,000 tonnes.

Recovered paper is in terms of volume the most important raw material at the site. In addition to that, the mill produces and uses groundwood pulp from forest thinnings. Other raw materials used include pigments that are added as fillers to improve the printing quality of the paper.

The steam and part of the electricity for papermaking are generated in an on-site power plant, with a small share of the fuel needs provided by light fuel oil and 99% by natural gas. Fresh water is taken from the Wertach and from wells.

Wastewater is cleansed in the on-site effluent treatment plant.

UPM Ettringen Environmental and Societal Responsibility 2018 is a supplement to the Corporate Environmental and Societal Responsibility Statement of UPM's pulp and paper mills (available at www.upm.com) and provides mill-specific environmental and societal performance data and trends for the year 2018. The annually updated mill supplements and the UPM Corporate Environmental and Societal Responsibility Statement together form the joint EMAS Statement of UPM Corporation. The next UPM Corporate Environmental and Societal Responsibility Statement and also this supplement will be published in 2020.

Production capacity	Up to 300,000 tonnes/year
Personnel	267 (total heads as at 31 December 2018)
Products	Printing papers UPM Eco Basic UPM Eco H UPM Eco G UPM Eco Prime UPM News
Certificates	EMAS – EU Eco-Management and Audit Scheme ISO 14001 – Environmental Management System ISO 9001 – Quality Management System ISO 50001 – Energy Management System OHSAS 18001 – Occupational Health and Safety PEFC™ Chain of Custody – Programme for the Endorsement of Forest Certification FSC® Chain of Custody – Forest Stewardship Council® All certificates can be found from UPM's CertificateFinder (available at www.upm.com/responsibility)
Environmental labels	EU Ecolabel for all paper grades Blue Angel (RAL-UZ 14 or 72) for all paper grades

We deliver renewable and responsible solutions and innovate for a future beyond fossils across six business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Specialty Papers, UPM Communication Papers and UPM Plywood. We employ around 19,000 people worldwide and our annual sales are approximately EUR 10.5 billion. Our shares are listed on Nasdaq Helsinki Ltd. UPM Biofore – Beyond fossils. www.upm.com

FSC www.fsc.org FSC® C014719
The mark of responsible forestry

For FSC certified products please see www.fsc.org

PEFC PEFC/02-31-80 Promoting Sustainable Forest Management www.pefc.org

For PEFC certified products please see www.pefc.org

EU Ecolabel www.ecolabel.eu
EU Ecolabel : FI/011/001

BLUE ANGEL THE GERMAN ECOLABEL
www.blauer-engel.de/uz72

Review of year 2018

Environmental protection has been an important topic at the Ettringen site for many years. The continuous reduction of energy and water requirements, a high raw material yield for waste reduction and the use of environmentally compatible chemical additives in the production process are the focus areas of the continuous improvement process, which has been steered by management systems for the environment, quality, energy and occupational safety since the plant has been certified in accordance with international standards.

As a company of the Finnish UPM Group, we acknowledge our responsibility towards the environment and are committed to minimising the impacts of our operations on the environment and our employees.

Production and environment
As one of the first paper recyclers in Germany, we have been contributing to a circular economy for more than 40 years.

We support sustainable forestry when purchasing forest thinnings for groundwood pulp production by working according to the PEFC and FSC Standards.

Environmental performance
We are reporting on our environmental performance in a Group-wide database. Here, deviations are recorded according to predefined categories, from 1 (not significant) to 5 (serious environmental damage). As in previous years, there were no deviations in 2018 with off-site effects (Cat. 3 or higher).

In accordance with the specifications of our integrated management system for quality, environment, energy and occupational safety, we evaluate environmental impact through internal and external audits.

In spite of several measures to save electricity (optimisation of pumps and agitators), specific electricity consumption increased in 2018, mainly as a result of higher groundwood pulp production.

In comparison with the previous year, specific steam consumption decreased by more than 5% through heat recovery and ventilation optimisation.

At the UPM Ettringen mill, the airborne emissions are well below the statutory limits. As a paper manufacturer with a high level of water consumption, water protection is a matter of particular concern to us. The effluent treatment plant ran consistently, combining high treatment efficiency with low energy consumption.

Specific wastes from recovered paper processing, which is the main source of waste at the mill were further reduced. The amount of sludge from the effluent treatment plant increased due to a rise in the incoming organic load at the inlet of the plant. Of the remaining residue, over 99% is recycled.

In 2018, there was one complaint from the neighbourhood about noise from rail traffic.

As a fire prevention measure, five fire drills were held to teach a total of 77 participants the correct handling of the fire extinguishers. The employees working in the recovered paper warehouse were given special firefighting training, which was attended by 11 participants.

Four fire drills/walks were conducted with the local fire brigade.

Both our own employees and employees of contractors are trained annually in the handling of chemicals. The risk assessments for chemicals were revised.

Since the spring of 2015, Aviretta has producing packaging paper on the PM 4 paper machine. UPM supplies them with fresh water, demineralised water and steam. We also handle pre-treated wastewater and provide finished goods logistics.

Wolfgang Ohnesorg,

General Manager

Martin Heinrich,

Senior Specialist
Environment & Management Systems

UPM Ettringen

Responsibility figures 2018

Waste

99.9%

of the waste are recycled

Specific amount of waste
(tonne per ton of paper) was reduced by

35%

from 2009–2018

Air

Specific emissions of nitrogen oxides from power plant have been reduced by

76%

from 2009–2018

Specific CO_2-emissions from power plant have been reduced by

41%

from 2009–2018

Water

Specific load of organic matter in cleaned wastewater (tonne COD per tonne of paper) was reduced by

16%

from 2009–2018

Specific load of phosphor in cleaned wastewater (tonne phosphor per tonne of paper) was reduced by

20%

from 2009–2018

Specific amount of wastewater (m^3 per tonne of paper) was reduced by

6%

from 2009–2018

Energy

Specific energy input (kWh per tonne of paper) was reduced by

28%

from 2009–2018

Safety

Number of accidents with lost time have been reduced by

91%

(11 in 2009, 1 in 2018)

In 2018 our employees conducted

403

Safety walks.

Certified fibre

The share of thinning wood from sustainable, certified forests (PEFC + FSC) was

90%

in 2018

93%

share of recycling fibers in the produced papers.

Health

Participation in health trainings

305

participant hours 2018

Employment

Currently

19

apprentices am UPM Ettringen site
5 paper technologists
6 automation electronics technicians
8 industrial mechanics

Air

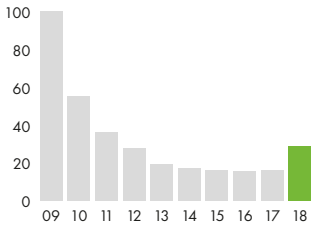
Energy generation is the main source of airborne emissions from paper mills. Annual loads could be hold steady thanks to improvements at the gas boilers.

EMISSIONS FROM THE POWER PLANT CONTINUOUS MEASUREMENT 2018

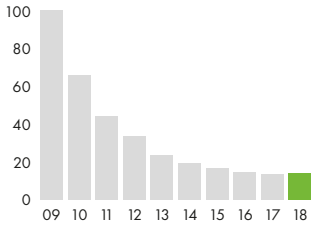
		Mean value of measurements (mg/Nm^3)		
	Limit value	Boiler 3	Boiler 8 + 9	Boiler 10
Carbon monoxide, CO	50	2.2	3.4	0.03
Nitrogen oxides, NO_x	100	82	73.1	60
Sulphurdioxid, SO_2 (only boiler 10)	35			2

The following graphs show the specific air emissions of UPM Ettringen as percentage related to the year 2009.

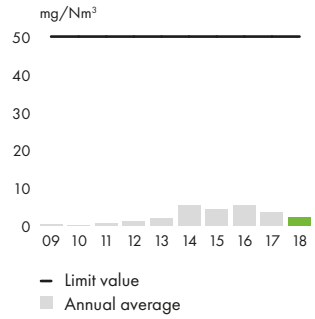
Particulate matter
Specific particulate matter emissions per tonne of paper in % in comparison with 2009



Nitrogen oxides, NO_x
Specific NO_x emissions per tonne of paper in % in comparison with 2009



Carbon monoxide, CO
Average concentration boiler 8, 9 and 10



Waste

The deinking of wastepaper is the main source of residue at UPM Ettringen. The volume of specific residue (incl. moisture) from normal production operations decreased slightly in comparison with the previous year.

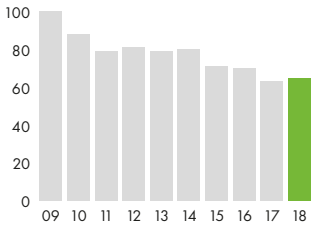
The amount of sludge from the effluent treatment plant increased due to a rise in the incoming organic load at the inlet of the plant.

In 2018, 99.9% of all production waste and byproducts were recovered. 87 % of waste and by products went into material recycling (with main focus to brick industry)

There is only a small amount of hazardous wastes – such as oil-containing residues – which are disposed of in accordance with legal regulations.

Bark, sawdust, windfall and fibrous material from prescreening are now classified as side-products. The increased use of wood from forest thinnings resulted in an increase in the quantity of these side-products.

Specific volume of waste and side-products
(development kg/tonne of paper in %)



Water

Water is indispensable for papermaking. The water we use is recycled within the process several times, before only a fraction of it is discharged from the circuit as wastewater.

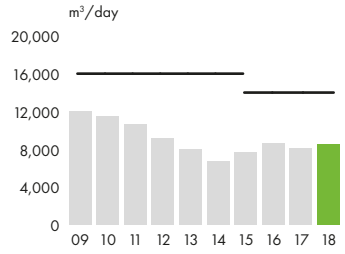
In the on-site treatment plant, the effluents are first cleansed in a chemical-mechanical and then in a biological treatment stage. If necessary, they are then treated with ozone to break not readily degradable substances (such as the lignin in the wood) into simpler forms, which can subsequently be removed by biofiltration.

Since April of 2015, the pre-treated effluents from Aviretta have also been purified in the effluent treatment plant.

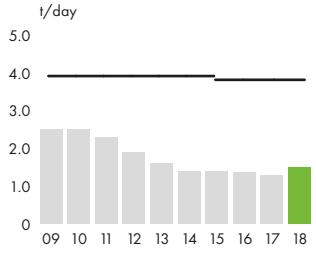
The daily effluent volume is clear below the limit. All discharge values are clear below the limits.

The following graphs with effluent volumes and effluent load refer to the total effluent volume from the treatment plant.

Effluent volume



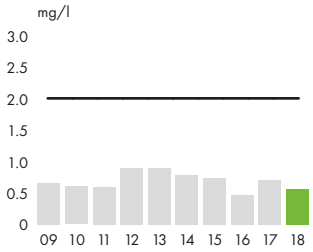
Chemical oxygen demand, COD



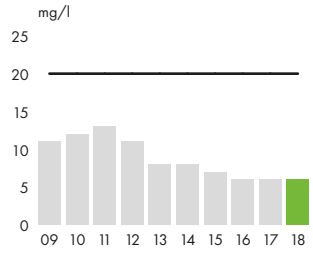
Since July 2016, a new permit is valid for the waste water treatment plant. Therein some limits have been adapted to the new conditions with lower effluent volume.

COD load [t/d] increased due to a higher amount of groundwood pulp and poor quality of recoverd paper during summer.

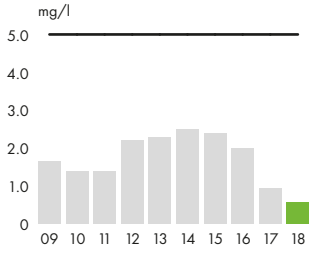
Phosphorus, P (total load)
Annual mean concentration in comparison with the limit value



Biological oxygen demand, BOD_5
Annual mean concentration in comparison with the limit value



Nitrogen (inorganic), N
Annual mean concentration in comparison with the limit value



Landfill

The former landfill site on the mill premises was surface-sealed in 2004 and recultivated. Monitoring and evaluation during the after-closure period did not show any evidence of adverse impacts on groundwater.

Structure and emergency organisation

Operators in charge are appointed for environmentally relevant production plants and ancillary facilities.

As required by law, appointed officers advise the mill management and the specialist departments in the following areas: immission control, water protection, waste, hazardous goods, radiation protection and internal rail operations.

In addition, there are designated representatives responsible for the integrated management system (quality, environment, energy) and for occupational safety, fire protection and data protection.

Comprehensive emergency plans have been defined for emergencies of all kinds, such as fire, industrial accidents and environmental incidents. From alerting to immediate action and follow-up, there are guidelines to minimise the effects of an emergency as far as possible. At the emergency center (factory gate), detailed flow charts are available for different types of emergencies. For emergencies of a larger scale, there is an emergency staff who decides on any further action to be taken.

Social responsibility

Well-functioning stakeholder dialogue is a key component for success for UPM. We are committed to developing the vitality of the communities close to our operations through active co-operation and open dialogue with various stakeholders as well as, for example, through sponsorships and employee volunteering

We impact local communities and societies in many ways. Understanding the impact that we have is an essential component of our business success. In many locations, we are a significant employer, taxpayer and partner to local entrepreneurs, making positive contributions to the local economy. We apply several precautionary measures to mitigate and remedy potential negative environmental and social impacts on our surrounding communities

Occupational safety
At UPM, we aim to be the industry leader in occupational health and safety. Our clear goal is zero fatal and serious accidents.

We are working to reduce or eliminate accidents in our sphere of influence through continuous improvement and effective risk management.

Before entering any of UPM's production sites, contractors must attend a UPM safety training course that introduces and explains general safety measures. In addition, depending on the task to be performed, there are also special safety instructions and work permits.

Overall, we achieved a 91% reduction in accidents (number of accidents with at least one lost day), from 11 in 2009 to 1 in 2018. However, we have not yet reached our goal. We will continue to work towards reducing our accident frequency rate and completely avoid serious accidents.

Occupational healthcare
We spend a large portion of our lives at the workplace, whose conditions can affect our health positively or negatively. Therefore, we want to create a work environment that is conducive to our employees' good health and to deepen their health awareness to promote and maintain their job satisfaction and motivation.

We have therefore implemented a corporate health management scheme comprising a variety of offers:

- We implemented a bicycle leasing system to which many employees have signed up
- There are weekly back training and yoga classes
- A workplace health day was held where we offered eye screening and introduced a colon cancer prevention programme
- Psychological risk assessments were carried out to find out how the employees' health is impacted by their work duties.

Community involvement
Last year, UPM Ettringen continued to sponsor "Kulturgut", a series of events organised by Aktion Hoffnung in Ettringen.

With the proceeds from the concerts and theatrical performances, Aktion Hoffnung supports in particular an online study programme for young people in a refugee camp in northern Iraq.

There, 16 students are already studying from home with support from learning groups and tutors. Over the next three years, up to 130 students are expected to begin their studies and to obtain an internationally recognised diploma or Bachelor degree according to US standard.

A youth football team was given financial support in the purchase of necessary training materials such as footballs, etc.

In November, the Türkheim book week association organised the 10th Türkheim book week at primary and secondary schools and at the local grammar school. Around 250 books published during the last two years were presented and there were readings by writers,

a workshop on comic drawing and teacher training on the subject of reading promotion. UPM provided financial support for these activities.

At the traditional medieval 6-day-long "Frundsbergfest", which takes place in Mindelheim every three years, UPM Ettringen offered children and adults an opportunity to make their own paper with watermarks. The visitors' donations were rounded up and handed over to the St. Nikolaus children's hospice in Memmingen.

Cooperation with schools and education

At the Ettringen site, we are currently training automation electronics technicians, industrial technicians and paper technologists. From September 2019 onwards, we will also provide training for future machine and production plant operators.

In 2018, the company took part in training fairs in Mindelheim, Bad Wörishofen and Memmingen. Apprentices and trainers from various fields were present at these events, answering questions from students, parents and teachers on the occupational profiles of different career options.

The paper mill offers pupils and applicants the opportunity to do an internship to discover what different careers and the company are about. There is also a "combined internship" where they are given information about the training options available at the mill and get to know the whole mill with its various departments and their interaction.

Environmental parameters 2018

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 and Societal Responsibility Statement.

Production capacity	Paper	Up to 300.000 t (1 paper machine)
Raw materials and additives	Recovered paper Round wood Fillers Processing chemicals Operating supplies	See UPM Corporate Environmental and Societal Responsibility Statement for more information
Energy	Fossil fuels Purchased power Hydropower	100% See UPM Corporate Environmental and Societal Responsibility Statement for more information
Emissions to air*	Carbon dioxide, CO_2 (fossil) Nitrogen oxides, NO_x Sulphur dioxide, SO_2 Particulate matter Carbon monoxide, CO	53,506 t 19.9 t 0.3 t 0.8 t 0.8 t
Water intake	Process-, cooling- and drinking-water	2,920,034 m^3
Discharges to water*	Effluent volume Chemical oxygen demand, COD Biological oxygen demand, BOD_5 Phosphorus, P (total) Nitrogen (inorganic), N Adsorbable organic halogen compounds, AOX	2,397,928 m^3 453 t 15 t 1.3 t 1.3 t 0.2 t
Waste and side-products**	Side-products – bark, sawdust, wood – fibre-reject prescreening Waste for recycling – deinking, fibre and biological sludge – coarse deinking residue – wood – metal waste – other Waste disposal – other Recovery rate (non hazardous waste and byproducts) Hazardous waste	 7,247 t 1,560 t 77,786 t 3,279 t 136 t 274 t 324 t 8 t 98% 67 t
Size of mill area	Built on or sealed	33 ha

* Here are stated the emissions, that are linked to paperproduction of UPM. Emissions that result from steam supply or co-treatment of wastewater of other companies are not listed.

** Quantity incl. moisture

Performance against targets in 2018

TARGET	TARGET ACHIEVED?
1 Water Maintain voluntarily reduced (by 20%) COD concentration discharged from the treatment plant (control value) to the Wertach river	Yes, the reduced value for COD concentration was kept all the time.
2 Waste Reduce specific losses of the deinking plant (Deinking-fibre-sludge) by 0.4 percentage points in comparison to average of 2017	Yes, losses were reduced by 0.9 percentage points
3 Energy – Reduce steam usage for hot water preparation for PM 5 by 18 MWh/a	– Due to damage to turbine 4 in the power plant, the savings measures and the associated temperature increase in the water system could not be implemented in 2018. Since the turbine was repaired in November 2018, this can now be addressed in 2019
– Reduce power consumption by 170 MWh/a by optimising three agitators	– Yes, reduction by 190 MWh achieved
– Reduce specific steam consumption of the paper mill by 1.5% in comparison with 2017	– Yes, reduction by 4.3% achieved
4 Material efficiency Reduce paper broke during change of reel spools by 15% through optimised control	The measures taken had only short-term success. The target could not be achieved. In 2019, work on this topic will continue with the manufacturer.

Targets for 2019

TARGETS AND MEASURES	DEADLINE	DEPARTMENT RESPONSIBLE
1 Water		
– Maintain voluntarily reduced (by 20%) organic load and phosphorus concentration discharged from the treatment plant (COD and P_{tot} control values)	31.12.2019	Manager Effluent treatment plant
– Reduce specific effluent volume by 2.5% in comparison with 2018.	31.12.2019	Manager Effluent treatment plant
2 Energy		
– Switch ceiling spots in PM 5 hall to LED and reduce number of spots (savings of 310 MWh/a).	31.12.2019	Manager Paper machine
– Reduce steam usage for hot water preparation for PM 5 by 18 MWh/a in comparison with 2017	31.12.2019	Manager Paper machine
3 Waste Reduce solids losses from DIP3 to treatment plant by 10% in comparison with the annual average of the year 2018 (filterable substances, new effluent stream, [t/d]).	31.12.2019	Manager Deinking plant
4 Material efficiency Reduce paper broke during change of reel spools by 15% in comparison with 2017 through optimised control	31.12.2019	Manager Paper machine

EMAS
Verified environmental management
REG.NO. FI - 000058

Environmental verifier's declaration on verification and revalidation 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 UPM Ettringen (the site Gebr. Lang GmbH Papierfabrik), Fabrikstrasse 4, 86833 Ettringen, Germany, as indicated in the UPM Corporate Environmental and Societal Responsibility Statement 2018 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:
Mit der Unterzeichnung dieser Erklärung wird bestätigt, dass:
– 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 2018 of UPM Ettringen (the site Gebr. Lang GmbH Papierfabrik) reflect a reliable, credible and correct image of all the activities of UPM Ettingen (the site Gebr. Lang GmbH Papierfabrik) within the scope mentioned in the UPM Corporate Environmental and Societal Responsibility Statement 2018.

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, 17.04.2019

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

We reduce the world's reliance on fossil-based materials by developing renewable and responsible products and solutions in all our businesses. **UPM Biofore – Beyond fossils.**

Gebr. Lang GmbH
Papierfabrik
(UPM Ettringen)
Fabrikstrasse 4
86833 Ettringen
Germany
Tel. +49 8249 802-0
Fax +49 8249 802-119

For further information,
please contact:
Wolfgang Ohnesorg
General Manager
Tel. +49 8249 801-100

Martin Heinrich
Senior Specialist Environment &
Management Systems
Tel. +49 8249 802-340
E-mail: info.ettringen@upm.com

UPM

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6/2019