

UPM Ettringen

ENVIRONMENTAL AND SOCIETAL RESPONSIBILITY 2019



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 2019 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 2019. 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 Updated UPM Corporate Environmental Statement and also this supplement will be published in 2021.

UPM delivers renewable and responsible solutions and innovates for a future beyond fossils across six business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Specialty Papers, UPM Communication Papers and UPM Plywood. As the industry leader in responsibility we are committed to the UN Business Ambition for 1.5°C and the science-based targets to mitigate climate change. We employ 18,700 people worldwide and our annual sales are approximately EUR 10.2 billion. Our shares are listed on Nasdaq Helsinki Ltd. UPM Biofore – Beyond fossils. www.upm.com

Production capacity	Up to 300,000 tonnes/year
Personnel	266 (total heads as at 31 December 2019)
Products	Printing papers UPM Eco Basic UPM Eco UPM ReCat, UPM MaxS 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



For more information about FSC certification visit fsc.org



For more information about PEFC certification visit pefc.org



EU Ecolabel : FI/011/001



www.blauer-engel.de/uz72

Review of year 2019

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 50 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 lightning and agitators), specific electricity consumption increased in 2019, mainly as a result of high groundwood pulp production and higher quality requirements in recovered paper preparation.

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 increased, which was mainly due to the decline in recovered paper quality. Of the remaining residue, over 99% is recycled.

In 2019, there was one complaint from the neighbourhood about a lorry losing a small amount of waste in the street. Also, there were some complaints about smell, the source of which could not be identified.

As a fire prevention measure, the maximum quantity of recovered paper to be stored was limited. Additionally, a concept for early fire detection was developed for the recovered paper warehouse, which is currently being approved. The employees working in the recovered paper warehouse were

trained in the use of fires extinguishing equipment.

Three fire drills/walks were conducted with the local fire brigade. In a large-scale drill with fire brigades from eight surrounding communities and the emergency services, around 200 volunteers were given training on how to work together in an emergency.

Both our own employees and employees of contractors are trained annually in the handling of chemicals. Several walks were conducted on site to inspect the storage facilities for chemicals in more detail. 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

Responsibility figures 2019

Air



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

61%

from 2010–2019

Specific CO₂-emissions from power plant have been reduced by

25%

from 2010–2019

Specific dust emissions (tonne per ton of paper)

40%

from 2010–2019

Specific sulphurdioxides emissions (tonne per ton of paper)

99%

from 2010–2019

Waste



99.7%

of the waste are recycled

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

19%

from 2010–2019

Energy



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

20%

from 2010–2019

Safety



Number of accidents with lost time
have been reduced by

81%

reduziert werden.
(18 in 2010, 2 in 2019)

In 2019 our employees conducted

719

Safety walks.

Certified fibre



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

96%

in 2019

93%

share of recycling fibers in the produced papers.

Health



Participation in health trainings

340

participant hours 2019

Employment



Currently

20

apprentices am UPM Ettringen site
5 paper technologists
6 automation electronics technicians
8 industrial mechanics
1 machine and plant operator

Air



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

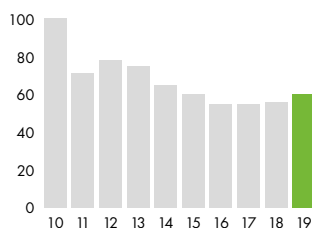
EMISSIONS FROM THE POWER PLANT CONTINUOUS MEASUREMENT 2019

	Limit value	Mean value of measurements (mg/Nm ³)		
		Boiler 3	Boiler 8 + 9	Boiler 10
Carbon monoxide, CO	50	1.6	4.2	0.03
Nitrogen oxides, NO _x	100	82	69.0	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 2010.

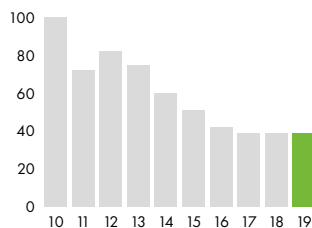
Particulate matter

Specific particulate matter emissions per tonne of paper in % in comparison with 2010



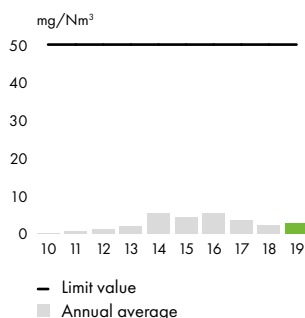
Nitrogen oxides, NO_x

Specific NO_x emissions per tonne of paper in % in comparison with 2010



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 increased due to poor quality of recovered paper 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.

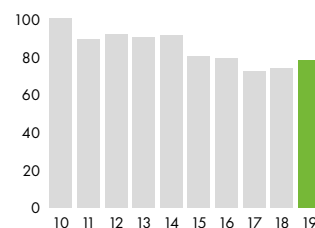
In 2019, 99.7% of all production waste and byproducts were recovered. 92% of waste and by products went into material recycling (with main focus to brick industry).

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.

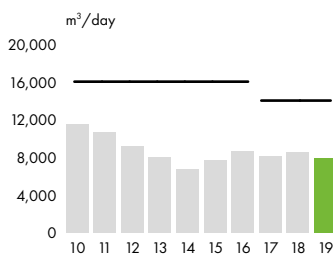
In the on-site treatment plant, the effluents are first cleansed in a chemical-mechanical and then in a biological treatment stage. If necessary, they are then treated with ozone to break not readily degradable substances (such as the lignin in the wood) into simpler forms, which can subsequently be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

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

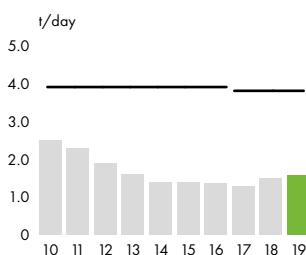
The daily effluent volume is clear below the limit. All discharge values are clear below the limits.

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.

Effluent volume



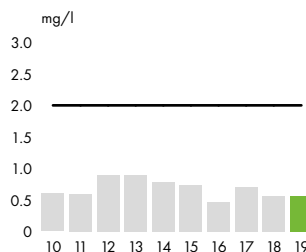
Chemical oxygen demand, COD



COD load [t/d] increased due to poor quality of recovered paper and high use of bleaching chemicals. Specific waste water amount of UPM Ettringen was reduced by 4.2%.

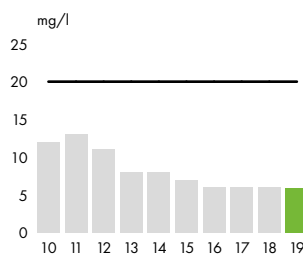
Phosphorus, P (total load)

Annual mean concentration in comparison with the limit value



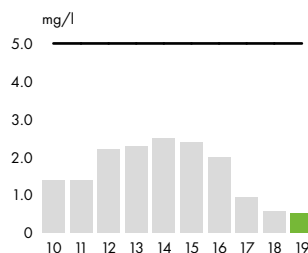
Biological oxygen demand, BOD₅

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.

Through a large number of continued actions, such as safety observations by employees or safety walks by supervisors, we were able to reduce the number of accidents (accidents with at least one lost day) by 81%, from 19 in 2010 to 2 in 2019.

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



Training fair in Bad Wörishofen in september 2019

- Two workplace health days were held where we offered eye screening and a "Back Check" muscle scan
- 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 in 2019, Aktion Hoffnung supports in particular a centre for street children run by the Salesians of Don Bosco in Wau and Juajok in South Sudan. The centre looks after up to 800 street children who lost their parents in the civil war or who are former child soldiers.

At the family day and 20th paper machine anniversary celebrations, some local associations contributed to the event programme and provided catering for the visitors. At this occasion the volunteers from the associations were also given a guided tour of the mill.

We supported the local fire brigade to help them realise the necessary conversion of their radio installation.

A number of local associations were given non-cash prizes for raffles.

Cooperation with schools and education

In addition to automation electronics technicians, industrial technicians and paper technologists, we have since September of 2019 also provided training for machine and production plant operators.

UPM offers a worldwide trainee programme, in which the Ettringen site has been involved since the autumn of 2019. We offer a master student in papermaking technology a career start including not only varied and responsible tasks, but also a 3-month stay abroad.

In 2019, the company took part in training fairs in Mindelheim and Bad Wörishofen. Apprentices and trainers from various fields were present at these events, answering questions from





Simulation of a car accident-demonstration of local fire brigade during family day



Visit of students in the electrician repair shop

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

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.

		2017	2018	2019
Production capacity	Paper (1 paper machine)	Up to 300,000 t	Up to 300,000 t	Up to 300,000 t
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%	100%	100%
		See UPM Corporate Environmental and Societal Responsibility Statement for more information		
Emissions to air¹⁾	Carbon dioxide, CO ₂ (fossil)	53,178 t	53,506 t	51,231 t
	Nitrogen oxides, NO _x	19.2 t	19.9 t	18.1 t
	Sulphur dioxide, SO ₂	0.3 t	0.3 t	0.3 t
	Particulate matter	0.8 t	0.8 t	0.8 t
	Carbon monoxide, CO	0.9 t	0.8 t	0.8 t
Water intake	Process-, cooling- and drinking-water	3,016,407 m ³	2,920,034 m ³	2,617,323 m ³
Discharges to water¹⁾	Effluent volume	2,263,526 m ³	2,397,928 m ³	2,081,219 m ³
	Chemical oxygen demand, COD	355 t	453 t	462 t
	Biological oxygen demand, BOD ₅	13 t	15 t	14 t
	Phosphorus, P (total)	1.6 t	1.3 t	1.2 t
	Nitrogen (inorganic), N	2.0 t	1.3 t	1.0 t
	Adsorbable organic halogen compounds, AOX	0.20 t	0.2 t	0.2 t
Waste and side-products²⁾	Side-products	3)		
	– bark, sawdust, wood		7,247 t	6,590 t
	– fibre-reject prescreening		1,560 t	2,541 t
	Waste for recycling			
	– deinking, fibre and biological sludge		77,786 t	75,493 t
	– coarse deinking residue		3,279 t	3,060 t
	– wood		136 t	207 t
	– metal waste		274 t	214 t
	– other		324 t	914 t
	Waste disposal			
	– other		8 t	311 t
	Hazardous waste		67 t	77 t
Size of mill area	Total use of land	33 ha	33 ha	33 ha
	Total sealed area			19 ha
	Total nature-oriented area on site			14 ha
	Total nature-oriented area off site			18 ha

¹⁾ 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.

²⁾ Quantity incl. moisture.

³⁾ Reporting of waste data was changed in 2018.



Performance against targets in 2019

TARGET	TARGET ACHIEVED?
1 Water <ul style="list-style-type: none"> Maintain voluntarily reduced (by 20%) organic load and phosphorus concentration discharged from the treatment plant (COD and P_{tot} control values) Reduce specific effluent volume by 2.5% in comparison with 2018 	<ul style="list-style-type: none"> Target achieved for P_{tot} Reduced COD maintained and reported only in quarters 1 + 2 Due to poor recovered paper quality and high bleaching agent use values could not be maintained in quarters 3 + 4 Yes, specific effluent volume reduced by 4.2%
2 Energy <ul style="list-style-type: none"> Switch ceiling spots in PM 5 hall to LED and reduce number of spots (savings of 310 MWh/a). Reduce steam usage for water preparation for PM 5 by 18 MW/a in comparison with 2017 	<ul style="list-style-type: none"> Yes, savings achieved, spots switched to LED Target unfortunately not achieved
3 Waste <p>Reduce solids losses from DIP 3 to treatment plant by 10% in comparison with the annual average of the year 2018 (filterable substances, new effluent stream, [t/d]).</p>	<p>Yes, daily solids losses reduced by more than 30% (from 10.5 to 7.9 t/day)</p>
4 Material efficiency <p>Reduce paper broke during change of reel spools by 15% in comparison with 2017 through optimised control.</p>	<p>Yes, paper broke reduced by 15.4% (average 2019)</p>

Targets for 2020

TARGETS AND MEASURES	DEADLINE	DEPARTMENT RESPONSIBLE
1 Water <ul style="list-style-type: none"> Reduce nutrient use (urea and phosphoric acid) in effluent treatment plant by increasing use of recycled nutrients. Convert cooling towers of WWTP to indirect cooling to reduce odour emissions. <ul style="list-style-type: none"> Step 1: concept design Step 2: completion and commissioning (subject to investment being approved) 	<p>31.12.2020</p> <p>30.11.2020 30.09.2021</p>	<p>Manager Effluent Treatment Plant</p> <p>Manager Effluent Treatment Plant</p>
2 Biodiversity <p>Create flowering areas on leased agricultural areas (min. 5,000 m²)</p>	<p>30.05.2020</p>	<p>Environmental Officer</p>
3 Waste <ul style="list-style-type: none"> Reduce specific losses of the deinking plant (Deinking-fibre-sludge) by 0.4 percentage points in comparison to average of 2019. Separate dehydration of preliminarily treated and activated sludge from the treatment plant. Target: reduce amount of water to be transported and transport distance by working with recyclers near the mill <ul style="list-style-type: none"> Step 1: concept design Step 2: rebuild and commissioning 	<p>31.12.2020</p> <p>31.12.2020 30.09.2021</p>	<p>Head of Production</p> <p>Manager Effluent Treatment Plant</p>
4 Energy <p>Save 108 MWh of power by installing more efficient air compressors on PM 5</p>	<p>31.12.2020</p>	<p>Head of Production</p>



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 updated UPM Corporate Environmental and Societal Responsibility Statement 2019 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 as amended by Commission Regulation (EU) 2017/1505, 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 updated Environmental Statement 2019 of UPM Ettringen (the site Gebr. Lang GmbH Papierfabrik) reflect a reliable,

credible and correct image of all the activities of UPM Ettringen (the site Gebr. Lang GmbH Papierfabrik) within the scope mentioned in the updated UPM Corporate Environmental and Societal Responsibility Statement 2019.

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, 21.07.2020

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.**



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