

UPM Ettringen

ENVIRONMENTAL AND SOCIETAL RESPONSIBILITY 2020



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.



Production capacity	Up to 300,000 tonnes/year		
Personnel	261 (total heads as at 31 December 2020)		
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		
	ISO 45001 – Occupational Health and Safety Management System		
	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 14a or 72) for all paper grades		



UPM Ettringen Environmental and Societal Responsibility 2020 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 2020. 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 2022.

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 sciencebased targets to mitigate climate change. We employ 18,000 people worldwide and our annual sales are approximately EUR 8.6 billion. Our shares are listed on Nasdaq Helsinki Ltd. UPM Biofore - Beyond fossils. www.upm.com



The mark of responsible forestry

For more information about FSC certification visit fsc.org



For more information about PEFC certification visit pefc.org





www.blauer-engel.de/uz72

Review of year 2020

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 ground-wood 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 2020 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.

The global pandemic and the associated lockdowns led to a decline in the demand for printing papers, resulting in repeated production shutdowns, which also affected the environmental indicators and many projects. Priorities had to be changed and, consequently, some of the originally defined goals could not be addressed sufficiently.

In spite of several measures to save electricity (optimisation of lightning and agitators), specific electricity consumption increased in 2020, mainly as a result of standstills 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 many startups and shut downs.
Of the remaining residue, over 99% is recycled.

In 2020, there were no complaints from the neighbourhood.

As a fire prevention measure, the maximum quantity of recovered paper to be stored was limited. In the field of fire protection, the Covid 19 pandemic was the all-dominating topic in 2020. It was impossible to carry out fire-fighting exercises with the local fire brigade, so our employees were given theoretical

fire safety training to prepare them in case any emergency was to arise. Since spare parts for the existing fire alarm system are no longer available, we started planning a completely new one at the beginning of the year. As a first sub-project, the first of 12 fire alarm control panels was installed (in the auxiliary materials warehouse) and successfully put into operation in December.

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



M. Keinrick

Martin Heinrich,

Senior Specialist
Environment & Management Systems

Responsibility figures 2020

Air



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

42%

from 2011-2020

Specific CO₂-emissions from power plant have been reduced by

19%

from 2011-2020

Specific dust emissionns (tonne per ton of paper)

17%

from 2011-2020

Specific sulphurdioxides emissions (tonne per ton of paper)

19%

from 2011-2020

Waste



99.9%

of the waste are recycled

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

9%

from 2011-2020

Energy



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

12%

from 2011-2020

Safety



Number of accidents with lost time have been reduced by

94%

reduziert werden. (17 in 2011, 1 in 2020)

In 2019 our employees conducted

770

Safety observations.

Employment



Currently

20

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

Certified fibre



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

99.4%

in 2020

92%

share of recycling fibers in the produced papers.





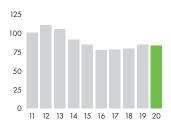
Energy generation is the main source of airborne emissions from paper mills. Annual loads could be hold steady thanks to improvements at the gas boilers.

EMISSIONS FROM THE POWER PLANT CONTINUOUS MEASUREMENT 2020							
		Mean value of measurements (mg/Nm³)					
	Limit value	Boiler 3	Boiler 8 + 9	Boiler 10			
Carbon monoxide, CO	50	1.8	5.3	0.06			
Nitrogen oxides, NO _x	100	80	75	66			
Sulphurdioxid, SO ₂ (only boiler 10)	35			1.7			

The following graphs show the specific air emissions of UPM Ettringen as percentage related to the year 2011.

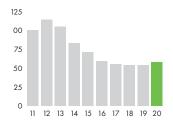
Particulate matter Specific particulate matter

emissions per tonne of paper in % in comparison with 2011



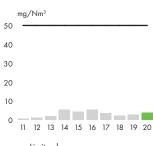
Nitrogen oxides, NO_{χ}

Specific NO_x emissions per tonne of paper in % in comparison with 2011



Carbon monoxide, CO

Average concentration boiler 8, 9 and 10



- Limit value

Annual average

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 many startups and shut downs 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.

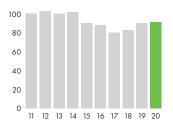
In 2020, 99.9% of all production waste and byproducts were recovered. 92% of waste and by products went into material recycling (with main focus to brick industry).

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, offcuts from logs 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 %)



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 significant impacts on groundwater.

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 chemicalmechanical 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.

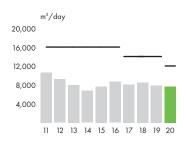
The following graphs of wastewater volume and loads refer to the total effluent volume from the treatment plant.

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

Since January 2020, a new permit is valid for the waste water treatment plant. Therein some limits have been adapted to the new regulatory require-

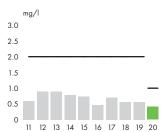
COD load [t/d] increased due to poor quality of recoverd paper and high use of bleaching chemicals. Due to increased downtime caused by Covid-19, the absolute effluent volume has decreased, while the specific amount of wastewater per tonne of paper has increased.

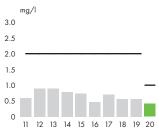
Effluent volume



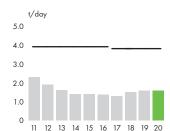
Phosphorus, P (total load)

Annual mean concentration in comparison with the limit value



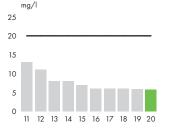


Chemical oxygen demand,



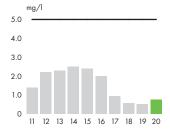
Biological oxygen demand, BOD,

comparison with the limit value



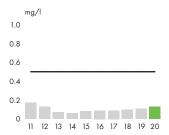
Nitrogen (inorganic), N

Annual mean concentration in comparison with the limit value



Adsorbable organic halogen compounds, AOX

concentration



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.

The year 2020 was marked by the Corona pandemic which led to a multitude of operational protective measures deriving from it. The crisis required a high degree of responsiveness from everyone. A large number of organisational measures and regular adjustments of production volume to the market situation, including short-time working periods, were necessary. Communication with the employees was intensified. Our employees were very understanding of the measures and kept the mill running with their flexibility. In this way, we mastered the past year well in terms of health aspects.

Through a large number of continued actions, e.g. safety observations by employees, and safety walks by managers, we reduced the number of accidents (accidents with at least one lost day) by 95% from 19 in 2010 to 1 in 2020.

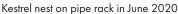
UPM has not yet reached its safety target, but by continuing to maintain the positive trend we aim to completely prevent any serious accidents.

Occupational healthcare

We spend a large portion of our lives at the workplace, whose conditions can affect our health positively or negatively.

In order to strengthen our employees' health awareness, improve working conditions and thus also promote job satisfaction and motivation, our corpo-







- A bicycle leasing scheme for the employees of UPM Ettringen
- Back training and yoga classes
- A health day for raising awareness about TBE and Lyme disease
- Digital classes for strengthening immune power, as well as cardio fitness and other exercise classes
- Positive impetus in the field of health care nutrition
- Height-adjustable desks to support a back-friendly working posture

Community involvement

UPM Ettringen took over sponsorship and worked in conjunction with the Ostettringen agricultural estate in a project called "Bayern blüht auf (Flowering Bavaria)", filling almost 6,000 sqm of flowering areas around the mill with insect- and bee-friendly plants to create a suitable habitat for useful insects.

The UPM Group provided 10,000 face masks via its Share and Care Programme to communities at mill locations. Gebr. Lang GmbH in Ettringen donated these masks to several local community charities.

Cooperation with schools and education

A total of 7 new apprentices started training as automation electronics technicians, industrial technicians and paper technologists, one of whom already in his second year of training.

At the beginning of the year, an inhouse seminar was held for the first time for "vocational training ambassadors". Here, the young participants are imparted conversational skills and questioning and presentation techniques, enabling them to present themselves well at school, at trade fairs and when dealing with different interlocutors.

UPM Ettringen hosted a meeting of the school-industry working group, giving us an opportunity to present the company to an audience of some 30 representatives from regional companies as well as teachers from different nearby schools.

Over the years, the paper mill has been offering students and other applicants the opportunity to do work placements, giving them insights into different careers and activities. By doing a "combined"





Recultivated landfill



Recovered paper is our main raw material

internship", they get to know available training options throughout the mill and its departments. Unfortunately, in 2020, due to the Corona pandemic, this was only possible to a very limited extent or not at all. A Teachers' Day and a school trip as part of the Allgäu Vocational Campaign as well as participation in

regional training fairs and the Girls' Day were on the agenda but had to be cancelled.

UPM offers a global trainee programme. This programme gives university graduates a career start and includes, in addition to varied and responsible tasks, also

a 3-month stay abroad. In 2019/2020, the trainee programme was carried out at the Ettringen mill in Papermaking. In 2021/2022, it is scheduled to take place in Energy and Environment.

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.

		2018	2019	2020	
Production capacity	Paper (1 paper machine)	Up to 300,000 t	Up to 300,000 t	Up to 300,000	
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	100%	100%	100%	
	Purchased power Hydropower		See UPM Corporate Environmental and Societal Responsibility Statement for more information		
Emissions to air ¹⁾	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	51,231 t 18.1 t 0.3 t 0.8 t	47,660 t 17.7 t 0.3 t 0.7 t 1.0 t	
Water intake	Process-, cooling- and drinking-water	2,920,034 m ³	2,617,323 m ³	2,690,021 m ³	
Discharges to water ¹⁾	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	2,081,219 m ³ 462 t 14 t 1.2 t 1.0 t 0.2 t	2,215,495 m ³ 516 t 15 t 0.8 t 1.7 t 0.3 t	
Waste and side-products ²⁾	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 Hazardous waste	7,247 † 1,560 † 77,786 † 3,279 † 136 † 274 † 324 † 8 † 67 †	6,590 t 2,541 t 75,493 t 3,060 t 207 t 214 t 914 t	5,824† 2,515† 70,819† 2,985† 209† 230† 606† 3† 34†	
Land use	Total use of land Total sealed area Total nature-oriented area on site Total nature-oriented area off site	34 ha	34 ha 20 ha 14 ha 18 ha	34 ha 20 ha 14 ha 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.



Performance against targets in 2020

TARGET ACHIEVED? 1 Water Reduce nutrient use (urea and phosphoric acid) in effluent treatment plant by - No, as less recycled nutrients were supplied externally, their use increasing use of recycled nutrients. could not be increased. Convert cooling towers of WWTP to indirect cooling to reduce odour emissions. Yes, concept developed, but alternatives are being investigated Step 1: concept design due to very high investment costs. Step 2: completion and comissioning (subject to investment being approved) 2 Biodiversity Create flowering areas on leased agricultural areas (min. 5,000 m²) Yes, flowering areas have been created. - Reduce specific losses of the deinking plant (Deinking-fibre-sludge) by 0.4 - No, target not yet achieved. Commissioning of new control system percentage points in comparison to average of 2019. delayed. Improvements are visible. Target to be continued in 2021. - Separate dehydration of preliminarily treated and activated sludge from the - Yes, concept developed, investment applied for. treatment plant. Target: reduce amount of water to be transported and transport distance by working with recyclers near the mill Step 1: concept design • Step 2: rebuild and commissioning Save 108 MWh of power by installing more efficient air compressors on PM 5Yes, savings of 108 MWh confirmed by measuremt

Targets for 2021

TARGETS AND MEASURES	DEADLINE	DEPARTMENT RESPONSIBLE
1 Water		
 Convert cooling towers of WWTP to indirect cooling to reduce odour emissions. 	30.09.21	Manager Effluent Treatment Plant
Step 2: completion and commissioning.		
Check, if alternative concepts are possible (subject to investment being approved)		
- Odour emissions from WWTP: Based on assessment, develop concept for odour reduction	30.06.21	Manager Effluent Treatment Plant
 Optimization of disc filter DIP3 in order to reduce amount of waste water during standstills (about 7800 m³/year) 	31.12.21	Head of Production
 Look into potential fresh water savings on paper machine and calculate costs 	31.12.21	Head of Production
2 Biodiversity		
 Create flowering areas on leased agricultural areas (3.600 m²) 	30.06.21	Environmental Officer
 Install nest boxes for different bird species on mill area. 	30.03.21	Apprentices + Environmental
Assemble nestboxes for peregrine falcon and kestrels		Officer
3 Waste		
 Reduce specific losses of the deinking plant (Deinking-fibre-sludge) by 0.4 percentage points in comparison to average of 2019. 	31.12.2021	Head of Production
 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 mille Step 2: rebuild and commissioning (subject to investment being approved) 	31.12.2021	Manager Effluent Treatment Plant
4 Energy		
 Optimise fine screening in stage 4 of recovered paper plant (annual savings of 160 MWh) 	31.12.2021	Head of Production
 Develop concept for changing wiring of fine screening in recovered paper plant to save energy 	31.12.2021	Head of Production
 Use new module (consumption energy management) visualising energy use of paper machine to identify potential savings. 	31.12.2021	Head of Production
 Decommission air compressors of WWTP by connecting it to central compressed air plant (savings of 20 KW x 8000 h) (provided investment is authorized) 	31.12.2021	Manager Effluent Treatment Plant
 Develop concept (with costs) for saving compressed air in micro flotation units of DIP3. 	31.12.2021	Head of Production



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 Popierfabrik), Fabrikstrasse 4, 86833 Ettringen, Germany, as indicated in the updated UPM Corporate Environmental and Societal Responsibility Statement 2020 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 and (EU) 2018/2026, 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
- the data and information of the updated Environmental Statement 2020 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 updated UPM Corporate Environmental and Societal Responsibility Statement 2020.

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, 05th. May 2021

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

