

UPM Schongau

ENVIRONMENTAL AND SOCIETAL RESPONSIBILITY 2021



UPM Schongau

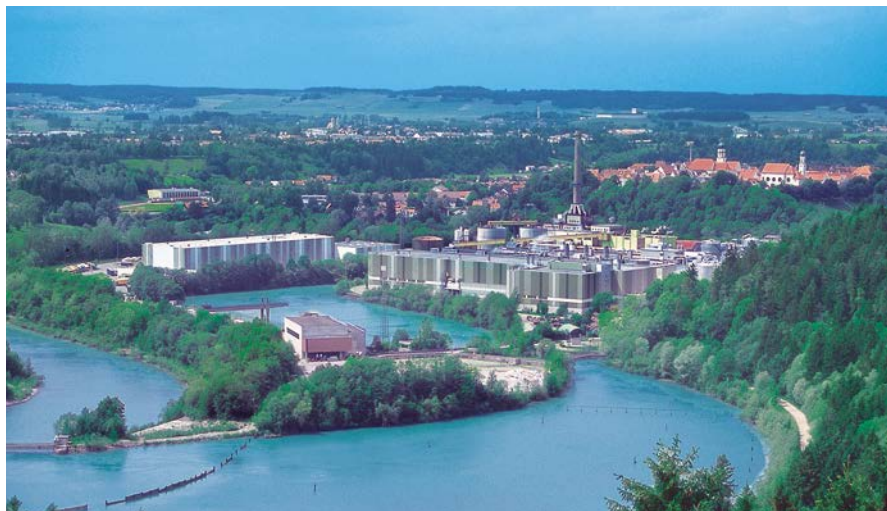
UPM Schongau is sited on a bend on the Lech river in the Southern German town of Schongau.

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, paperbacks, 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.

UPM Schongau cogenerates electricity and steam in two power plants according to the principle of combined heat and power. Power is used to drive the paper machines, while steam is needed for drying the moist web.

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



Production capacity	Up to 740,000 tonnes per annum
Personnel	570 (total heads as at 31 December 2021)
Products	Standard and improved newsprint as well as supercalendered uncoated paper: UPM Brite UPM News UPM ReCat UPM Eco UPM EcoPrime UPM MaxS UPM EcoBasic UPM Book
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 UPM News, UPM Eco H/G, UPM ReCat and UPM EcoBasic



UPM Schongau Environmental and Societal Responsibility 2021 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 2021. 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 2023.

UPM delivers renewable and responsible solutions and innovate for a future beyond fossils across six business areas: UPM Fibres, 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 17,000 people worldwide and our annual sales are approximately EUR 9.8 billion. Our shares are listed on Nasdaq Helsinki Ltd. UPM Biofore – Beyond fossils. www.upm.com



For more information about FSC certification visit www.fsc.org



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EU Ecolabel : FI/011/001



www.blauer-engel.de/uz72

Review of year 2021

Environmental protection has been an important topic at the Schongau 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 wood chips for fresh fibre 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).

Also recorded are the specific emissions to water and air and the specific waste volume, which are mostly very good, both on corporate and European level.

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.

Papermaking requires large amounts of energy. In recent years, great efforts have therefore been made to improve energy efficiency at the site.

Also in 2021 we set ourselves targets and measures for continuous improvement in the areas of energy efficiency and the environment.

The demand situation stabilised again in 2021. As recovered paper was short in supply, we had to intervene massively

both in our product range and in our recipes. In some cases, paper machine shutdowns were necessary to deal with the raw material shortage. These circumstances and influences affected our work towards continuously improving our performance data, costs and energy key figures.

For years now, airborne emissions have been well below the limit values. Over the past 10 years, we have been able to reduce the specific nitrogen oxide load by 26% through the replacement of the steam power plant and other technical measures in the energy generation plants, such as flue gas recirculation.

The amount of waste and by-products in absolute terms remained more or less constant. The specific amount of waste decreased slightly.

Boiler ash was used as a product to 100%. Applications include use as a



Wolfgang Ohnesorg
General Manager



Ute Soller,
Manager OHS/Environment/
Management Systems



Martin Heinrich,
Management System Representative

- ▶ soil stabiliser, as an additive for construction materials and as a replacement for soda lye in our own production plants.

Another recovery option for ash was developed in co-operation with a filler supplier. Ash products are used to replace part of the burnt lime necessary for making calcium carbonate.

A catalytic converter was installed in the CHP plant in order to reduce the amount of formaldehyde in the flue gas. In order to ensure a safe and stable operation of the effluent treatment plant, further steps were taken to reduce chemical consumption, homogenise effluent volume and coordinating the production programme accordingly.

In the effluent treatment plant, an “Advanced Process Control” project was launched. It is aimed at optimising the plant’s operation through the use of artificial intelligence. At the moment, the control system is still in the commissioning phase.

At the beginning of 2021, we received complaints again about odour nuisance. We are in close contact with the neighbourhood and are still monitoring and analysing the plant. Since the autumn, there have been no more complaints.

As a fire prevention measure, the sprinkler lines were renewed and exercises carried out with the mill fire brigade to the extent permitted by the Covid regulations.



Contribution to UN Sustainable Development Goals in 2021

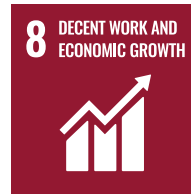


Energy

District heating to city of Schongau was in-creased by

22%

from 2012–2021



Employment

Currently

26

apprentices at UPM Schongau site
9 paper technologists
1 paper technologist (in a dual study programme)
8 electronics technicians for industrial systems
8 industrial mechanics



Certified fibre

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

89%

in 2021



Air

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

26%

from 2012–2021



Water

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

46%

from 2012–2021



Safety

In 2021 our employees conducted

1,618

Safety observations.

In 2021, airborne emissions remained largely constant on a low level. Energy generated from the incineration of process residue and used wood reduced our natural gas usage. The high proportion of mostly renewable fuels contributes to cutting fossil CO₂ emissions.

The specific NO_x emissions have largely remained constant in recent years. The slight fluctuations result from the fact that the operation of the gas and steam turbine has been adjusted to the power demand and the decreased efficiency of the production plants.

The mean emission concentrations of nitrogen oxides and particulates from our fluidised bed boiler are clear below the limits.

The emissions from the power plants exceeded the half hourly mean values in four instances (2 x Hg, 1 x NO_x, 1 x CO) and the daily mean value for NO_x in one instance.

In order to stabilise the fluidised bed boiler, its operation is being optimised and we are investigating the installation of intelligent process control, such as in the effluent plant.

UPM Schongau's fluidised bed boiler is operating on solid fuels. The major part of the ash (71,547 t) resulting from the energy generation process is classified as ash product (in accordance with the German Closed Cycle Management Act) and used for construction materials and in the cement industry. However, the recovery rate is subject to seasonal cyclical fluctuations. In 2021 100% of the ash was used as a product. Furthermore, also sawdust (4,132 t) is classified as side-product which is 100% re-used.

In 2021, the recycling rate for non-hazardous waste and side-products was 97%. Recycling options were found for 100% of the bed ash of the combined heat and power plant. The majority of hazardous waste is bag filter ash from the combined heat and power plant.

EMISSIONS FROM THE COMBINED HEAT AND POWER PLANT 2021

	Limit value (mg/Nm ³)	Mean value of measurements (mg/N m ³)
Fluidised bed boiler/Continuous measurement		
CO	50	17
Particulate matter	5	0.5
SO ₂	50	2
NO _x	150	123
Hg _{tot}	0.03	0.01
HCl	10	0
C _{tot}	10	0
Fluidised bed boiler/One-time measurement		
HF	1	n.d
Cd,Tl	0.05	n.d
Sb, As, Pb, Co, Cr, Cu, Mn, Ni, V, Sn	0.5	0.005
PCDD/F	0.1 ng/Nm ³	0.005
Gas-powerplant/Continuous measurement		
CO ⁽¹⁾	100–50	20
NO _x	75–100	33

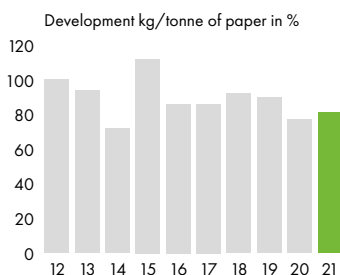
n.d. = not detectable

⁽¹⁾ The gas-powerplant has different values according to operating mode. The first value is valid for the gasturbine, the second value for the recovery boiler. When both are in operation a mixed calculation is done.

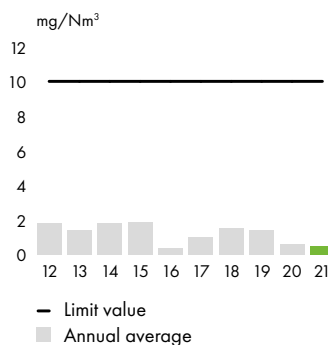
Landfill

The former Rösenau landfill site is located on the opposite side of the Lech. Until 2009 it was used for the disposal of ash and bed sand from CHP 2. This part of the landfill has been leased out and is used to generate photovoltaic energy. The Rösenau landfill has not yet completely entered the aftercare period. The monitoring of the lysimeter field to assess the surface impermeability has not yet been completed. However, the ash body of the landfill is impermeable. There is neither leachate nor landfill gas. Several groundwater gauges have been installed around the landfill, which are checked quarterly for any influence by the landfill. The impact on the groundwater was determined as not being harmful to the environment.

Nitrogen oxides, NO_x

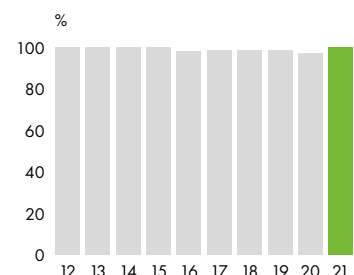


Particulates



Recovery rate

(non hazardous waste and side-products)



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.

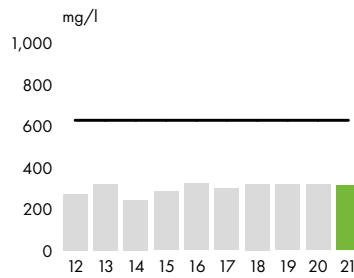
The capacity of the on-site multi-stage effluent treatment plant corresponds to that of a treatment plant for 420,000 people.

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.

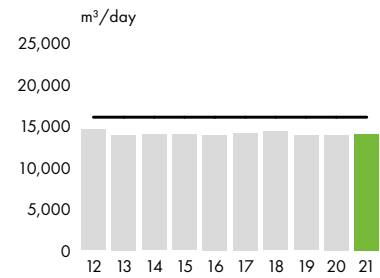
The quality of the treated effluents is continuously monitored, both internally and by the authorities in charge.

In June, the nitrogen concentration in the treatment plant outflow, at 8.3 and 8.8 mg/l respectively, slightly exceeded the limit of 7.5 mg/l in two instances. Due to disruptions in production, the load in the treatment plant influent was reduced too quickly. The microorganisms could no longer adapt to the abruptly reduced supply.

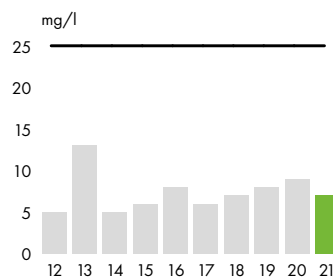
Chemical oxygen demand, COD



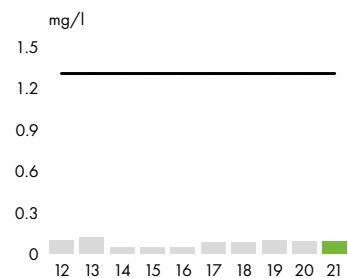
Effluent volume



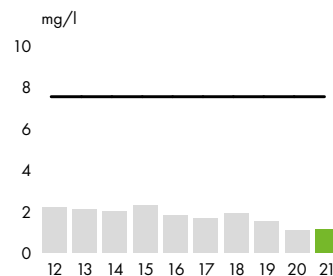
Biological oxygen demand, BOD₅



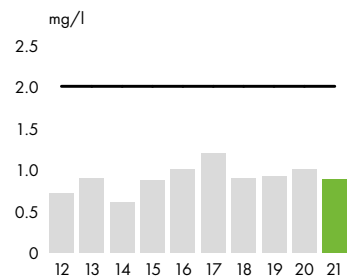
Adsorbable organic halogen compounds, AOX



Nitrogen (inorganic), N



Phosphorus, P



— Limit value
 ■ Annual average

Organisational 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 eliminate accidents in our sphere of influence through continuous improvement and effective risk management.

Despite many continued actions, e.g. safety observations by all employees, and a campaign with an external consultant on the topic of "Occupational safety and leadership" we were not able to reduce the number of accidents or accident frequency (accidents with at least one lost day per million working hours). At 7.4, the accident frequency remained on the same level as in the previous year. A frequency of 2.4, as in 2019, was not able to be achieved.

UPM has not yet reached its safety target and work is continuing to completely prevent any serious accidents.

Also in 2021 the Corona pandemic and the multitude of operational protective measures deriving from it was a focus area of our health and safety work. The crisis continued to require a high degree of responsiveness from everyone. A large number of organisational measures and regular adjustments of our production volume

to the market situation were necessary. We intensified the communication with our employees, who 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. The good cooperation with our team of company physicians and their increased presence were a supporting factor in this regard.

Occupational healthcare

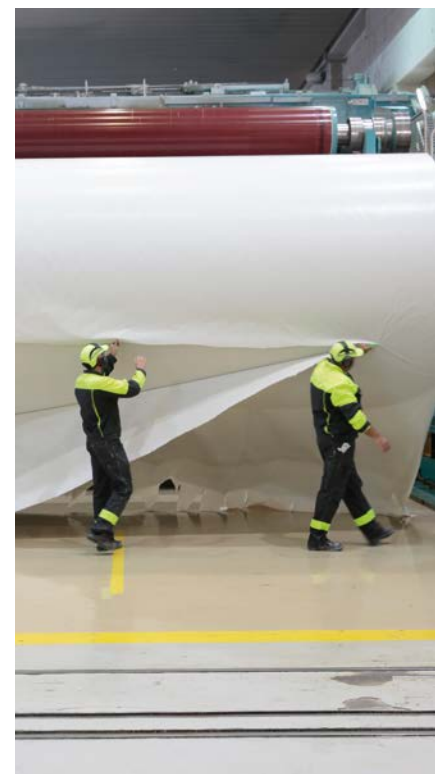
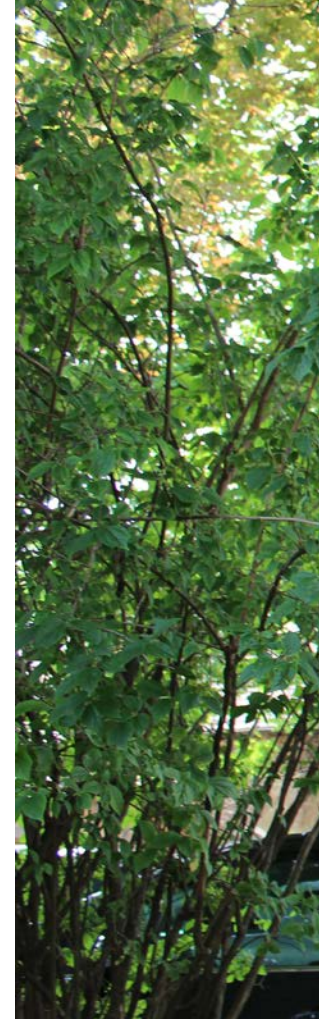
Our health management activities in 2021 were strongly influenced by the Corona pandemic. In order to protect our employees, our main focus was on implementing key anti-Covid measures and guidelines and communicating them in a targeted way. Despite the difficult environment, UPM Schongau offered its employees the opportunity to participate in various courses and activities. In addition to yoga back health courses, there was also a virtual sleep seminar.

As a new communication channel for health topics, a podcast was launched. Two episodes on the topics of "running" and "health insurance benefits" were broadcast in 2021. In the future, UPM Schongau wants to cater even better to the needs of its employees. To this end, a health survey took place in the summer of 2021. Based on the survey results a concept is now being developed for 2022 and beyond to provide a tailor-made offering for each individual employee.

Community involvement

UPM Schongau sponsors numerous associations and activities at its location in the Weilheim-Schongau district. As part of a cooperation in the field of addiction prevention, UPM Schongau supports the "Media Scouts" project. In this project, the Weilheim-Schongau Health Department addresses the important topic of new media and aims to improve the media competence of children and young people.

In the field of environmental protection, UPM Schongau is committed, among other things, to species conservation. As part of UPM's "Paper Mill and Integrated Nature (Bird) Conservation" project, 34 nesting boxes were installed on the mill premises in the summer. The



Taking paper-samples for quality inspection.



Apprentices are installing nesting boxes on mill area.

project is intended to provide a permanent habitat for native bird species. In the coming years, it will therefore be closely monitored how the nesting boxes are accepted.

In autumn 2021, UPM created spawning grounds for native fish species directly at the mouth of the mill canal into the Lech River. UPM Schongau is committed to biodiversity projects at the local level.

In March, the Schongau mill received an award for its environmental contribution and received a certificate from the Bavarian Environmental and Climate Pact (Umwelt + Klimapakt Bayern).

Cooperation with schools and education

At the Schongau site, we are currently training paper technologists, electronics technicians for industrial systems and industrial mechanics. In 2021 nine apprentices started training in the paper mill. They went through an extensive induction programme, which included various seminars, for example



New created spawning grounds for native fish at river Lech.

on the topics of occupational safety and data security, an "etiquette seminar" and a three-day "getting to know each other"-meeting in the Altmühl Valley.

In cooperation with the region's schools, UPM Schongau offered a total of 19 interns the opportunity to do a "taster work placement", enabling them to get

to know various career options and gain insights into the workings of a paper mill.

Moreover, UPM Schongau participated in two virtual career fairs and its team of trainers was involved in the local secondary school's career choice week.

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.

		2019	2020	2021
Production capacity	Paper (3 paper machines)	Up to 740,000 t	Up to 740,000 t	Up to 740,000 t
Raw materials and additives	Recovered paper Wood chips Fillers Process chemicals Operating supplies	See UPM Corporate Environmental and Societal Responsibility Statement for more information		
Energy	Renewable fuels Fossil fuels Purchased power Hydropower	27% 73%	31% 69%	27% 73%
		See UPM Corporate Environmental and Societal Responsibility Statement for more information		
Emissions to air	Carbon dioxide, CO ₂ (fossil) ¹⁾ Nitrogen oxides, NO _x Sulphur dioxide, SO ₂ Particulates Carbon monoxide, CO	247,085 t 165 t 0.8 t 3.3 t 58 t	237,429 t 142 t 0.2 t 2.0 t 38 t	243,816 t 150 t 1.1 t 2.1 t 48 t
Water intake	Process, cooling and drinking water – of which cooling water – of which drinking water	22,316,176 m ³ 16,623,352 m ³ 19,018 m ³	20,871,958 m ³ 15,159,566 m ³ 17,723 m ³	24,101,870 m ³ 18,335,352 m ³ 20,149 m ³
Discharges to water	Effluent volume Chemical oxygen demand, COD Biological oxygen demand, BOD ₅ Phosphorus, P Nitrogen (inorganic), N Adsorbable organic halogen compounds, AOX Total organic carbon (TOC) Total Nitrogen bound (TNb)	5,040,024 m ³ 1,617 t 40 t 4.7 t 7.5 t 0.4 t – –	5,060,754 m ³ 1,620 t 41 t 5.1 t 5.1 t 0.5 t – –	5,109,588 m ³ 1,583 t 34 t 4 t 6 t 0.5 t 451 t 28 t
Waste and side-products²⁾	Side-products – ash – sawdust Waste for recycling – fluidised bed sand – metal – construction waste – paper + board – other Waste disposal – fluidised bed sand – construction waste Recovery rate ³⁾ Hazardous waste	76,217 t 2,706 t 2,496 t 1,099 t 832 t 384 t 289 t 1,589 t 231 t 98% 1,329 t	75,408 t 2,910 t 1,359 t 744 t 902 t 375 t 563 t 2,715 t 0 t 97%	71,547 t 4,132 t 4,157 t 759 t 2,121 t 353 t 529 t 0 t 0 t 100% 1,455 t
Land use	Total use of land Total sealed area Total nature-oriented area on site Total nature-oriented area off site	38 ha 23 ha 8,5 ha 42 ha	38 ha 23 ha 8,5 ha 42 ha	38 ha 23 ha 8,5 ha 42 ha

¹⁾ The combined power plant is operated depending upon the cost of electricity and feeds the gen-erated power into the public grid. The mill's electricity requirements are largely covered with power from the public grid. The CO₂ emissions reported for UPM Schongau are the actual fossil CO₂ emissions from the site, excluding flows of electricity.

²⁾ incl. moisture

³⁾ Calculation includes non hazardous waste and Side-products



Performance against targets in 2021

TARGET	TARGET ACHIEVED?
1 Energy <ul style="list-style-type: none"> Optimise hot water system in the entire mill through previously unused condensation steam from CHP 3 and condensate recovery from heat recovery systems of paper machines (saving 5,000 MW of energy) Integrate heat exchanger in heat recovery system of PM 9 (implementation of concept from 2019), saving 5,600 MW of live steam. Develop concept for targeted, grade-specific energy use during TMP grinding 	<ul style="list-style-type: none"> Not achieved, due to lacking resources Will be installed in Q1-2022 Achieved, implementation in 2022
2 Water <ul style="list-style-type: none"> Carry out conceptual engineering study for automated control system enabling process stabilisation in WWTP and long-term load reduction Develop concept for treating sulphur in inflow to WWTP Develop concept for reducing inflow of unpolluted rainwater to WWTP 	<ul style="list-style-type: none"> Project in progress; results end of 2022 Achieved; implementation 2022 Partly achieved, ongoing
3 Waste Develop concept for using bag filter ash as a product, or explore alternative recovery options	Concept (rebuilt) ready. Not enough capacity for investment planning
4 Air emissions <ul style="list-style-type: none"> Master's thesis „UPM SOG and carbon neutrality“ to identify possible concepts Buy new wheel loader with 15% lower diesel consumption for wastepaper warehouse 	<ul style="list-style-type: none"> Achieved Achieved (reduction 41%)
5 Environmental incidents – Clean Run category 3, 4 and 5 Cut the number of incidents (2020: 1; 2021: 0)	Not achieved

Targets for 2022

TARGETS AND MEASURES	DEADLINE	DEPARTMENT RESPONSIBLE
1 Energy <ul style="list-style-type: none"> Finalise project "Optimisation of the hot water system in the entire mill through previously unused condensation steam from CHP 3 and condensate recovery from heat recovery systems of paper machines" <ul style="list-style-type: none"> Energy saving: 5,000 MWh CO₂ saving: 600 t/a Implement concept for targeted, grade-specific energy use during TMP grinding (LC grinding PM 6) <ul style="list-style-type: none"> Power saving: 5000 MWh/a CO₂ saving: 2476 t/a Investigate possibility of reducing the set-point temperature in warm water buffer no 2 (from 55° to 45°C) without negatively impacting production <ul style="list-style-type: none"> CO₂ saving: 350 t/a Implement project for „Renewal of the TMP heat recovery system including capacity increase“ <ul style="list-style-type: none"> CO₂ saving: 5000 t/a 	31.12.22 31.12.22 31.12.22 31.12.23	Manager Energy/Engineering Manager Pulp Production/PM6 Manager WETW Manager Pulp production/Energy
2 Water <ul style="list-style-type: none"> Implement control system enabling process stabilisation in WWTP and long-term load reduction Implement concept for treating sulphur in inflow to WWTP 	31.12.22 31.12.22	Manager Pulp Production Manager WETW
3 Waste Finalise concept for using bag filter ash as a product in such a way that it is ready to be decided upon	31.12.22	Manager WETW/Energy
4 Environmental incidents – Clean Run category 3 Reduce the number of incidents relating to air emissions by optimising the operation of CHP 2	31.12.22	Manager Energy



Environmental verifier's declaration on verification and validation activities

Environmental verifier, Astrid Günther (DE-V-0357), acting for TÜV NORD CERT Umweltgutachter GmbH, licensed for the scope NACE Code 17.12 (papermaking), declares to have verified whether the site UPM GmbH, Schongau mill, Friedrich-Haindl-Strasse 10, 86956 Schongau, Germany, as indicated in the updated Environmental Statement 2021 of the mentioned site (registration no. FI-000058), meets all requirements of Regulation (EC) No 1221/2009 as amended by Commission Regulation (EU) 2017/1505 and (EU) 2018/2026, 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 updated Environmental Statement 2021 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 updated Environmental Statement 2021.

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, 12th April 2022

Astrid Günther
 Environmental verifier
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 TÜV NORD CERT Umweltgutachter GmbH



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